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Traffic Engineering is that phase of engineering which deals with the planning and geometric design of streets, highways, and abutting lands, and with traffic operation thereon, as their use is related to the safe, convenient, and economic transportation of persons and goods.

COVER: Macy's-Jamaica Store, Long Island, represents modern ideas in relation to parking facilities for the customer. Parking area of roof is approximately 50,000 square feet and provides space for about 150 automobiles. Driving ramps are enclosed in one corner of the building.

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LETTERS TO THE EDITOR

GENERAL

At present I am stationed in Garmisch-Partenkirchen in Bavaria, Germany. This Post is one of two large recreation centers for the U. S. occupation forces. It is situated in the heart of the Bavarian Alps. With the possible exception of polo, we have facilities for all sports, including ideal fishing and hunting. This is a paradise for photographers, as the beauty of the mountain scenery is breathtaking.

I am serving the Post as Traffic Engineer, Safety Director, and Fire Marshal. There is a big field here for traffic engineers as the Germans have little conception of how to handle modern traffic. Their entire traffic code is antiquated and badly in need of revision. Their ideas on highway design and traffic control are twenty years behind those in the States. Even their Autobahns, which conconstitute a fine network of highway, have several serious design faults and are comparable to our *first* four-lane roads.

As I am the last of a group of fifteen traffic engineers, who came over in January of 1944, still in the Theater, I also serve as Consultant Traffic Engineer for the EUCOM Safety Director. That, added to my Post duties, plus serving as Consultant to several of the local German communities, keep me on the jump but adds up to a very interesting life.

A. N. McCandliss
Garmisch Military Post
APO 17, c/o PM, New York

My work here with the Department has taken a very interesting turn during the past six months. The State Legislature this Spring passed a law which gives the Department of Highways the responsibility for the construction, maintenance and traffic control devices on all urban extensions of state highways in cities of less than 15,000, and similar responsibilities only to a lesser degree in cities above that population figure.

The law also specified that the Department should have two Assistant Directors to handle the rural and urban phases respectively. The Traffic Engineer, Herb Higgins, decided to follow the same pattern, so now we have a Rural and Urban Section in our office, of which I am the Prometheus of the latter.

Inasmuch as we have made O&D surveys in many cities which cover the long range improvement program, our first thought was that we had better start on some interim relief measures that will care for the immediate problems which are now only too willingly thrown into our lap. Therefore, we have started a Capacity Survey of urban routes in our major cities. After locating the points of congestion, we are applying the usual treatments of progressive signalization, one-way street systems, restriction of turning movements and prohibition of parking to obtain a street capacity sufficient to handle the anticipated 1960 volumes. We hope by that time to have a few depressed and elevated expressways built which will prove to be the final solution in the most congested areas.

Robert E. Dunn
Department of Highways
Olympia, Washington

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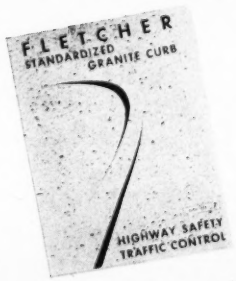

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Frankly Speaking

Traffic engineers throughout the nation have been accepting challenging assignments to move ever-mounting volumes of vehicular traffic into, out of, and through cities expeditiously and with safety, over streets never meant to handle more than fractions of the loads they carry. At the same time they have carved out of those streets enough space to park standing vehicles at the curbs and just a little more space in which the vehicles can maneuver into the curbs. The invariable response to these challenges are miracles of the motor age. Just contemplate this. Regular diurnal flows, into cities mornings and out again evenings, of populations equivalent to sizeable cities, are handled by surface transportation over streets controlled and regulated by a multitudinous variety of ingenious devices. These devices have been predicated on sound traffic engineering principles, developed under the stress of sheer necessity and installed under the stern discipline of the ever-present, multi-sided opposition to proposed changes in the generally accepted travel pattern.

Under the pressure of their onerous duties traffic engineers have had little time to cogitate over how they have achieved the incredible. It is high time now for them to devote their talents and some of their precious time to setting down in simple, brief, concise and clear language their collective experiences and to distill out of these experiences, concise facts and tabular and graphic data for easy and ready reference. Then those who are in a position to use and apply these data can do so effectively. In this way, traffic engineers can be of inestimable value in contributing: (a) to the further improvement of traffic control operations of our existing streets; (b) to the more effective planning and geometric design of traffic and pedestrian ways and of terminal facilities; and (c) to the development of the best organizational procedures through which the traffic engineer can achieve maximum cooperation from political, civic and business groups.

The most practical way that traffic engineers can make their contributions to the welfare of their communities and to the nation at large, is to participate actively and enthusiastically in the research activities of the technical committees of the *Institute of Traffic Engineers*. These committees can develop a living body of knowledge on the science and art of traffic engineering that can be kept fresh and alive through the medium of a loose leaf reference volume, regularly reviewed, constantly pruned of obsolete material and replenished with data developed by current research.

No traffic engineer can afford not to accept this challenge to contribute toward better living in our motor age.

Nathan Cherniack

Vice-President

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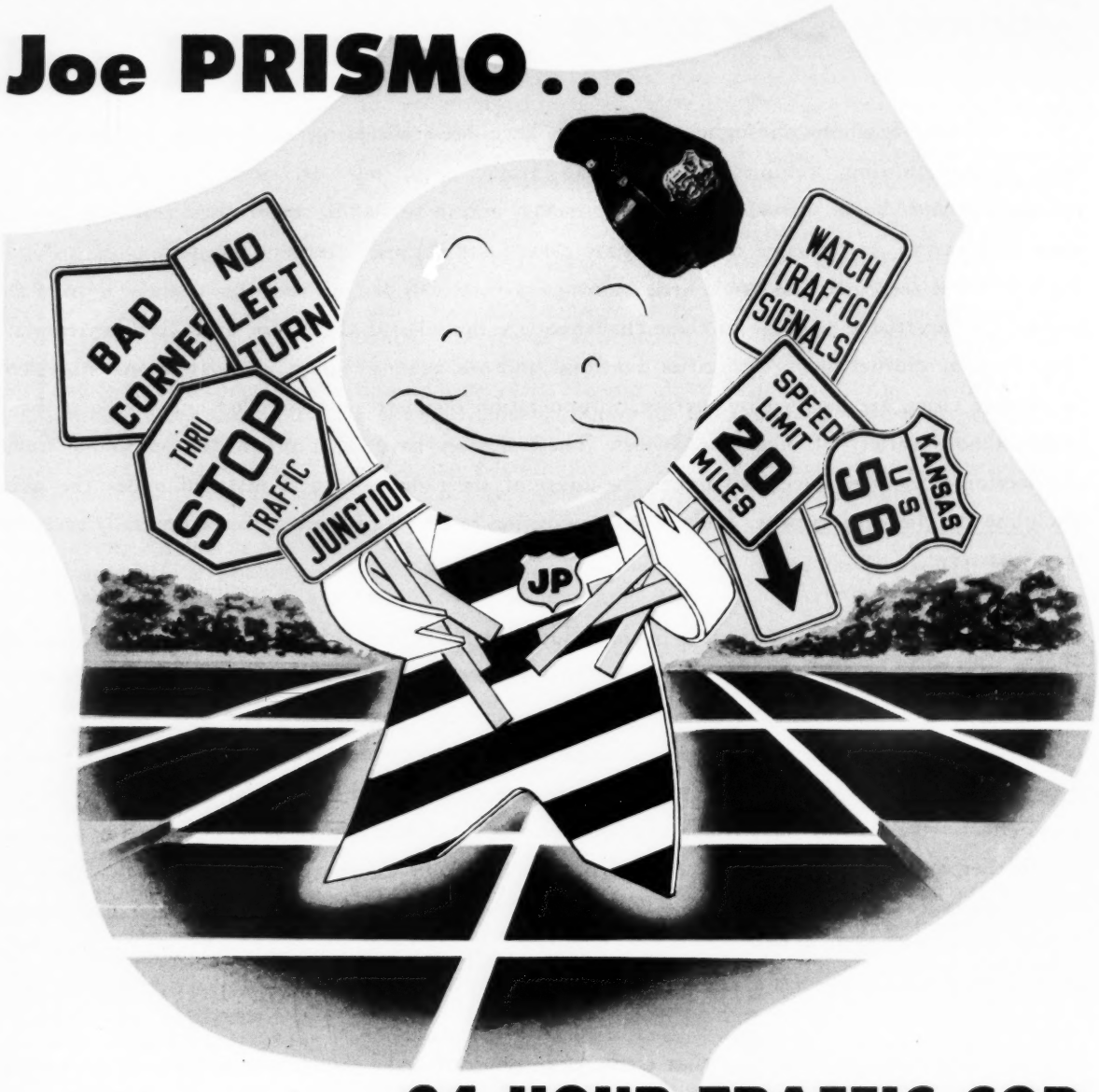

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The SPHERE of SAFETY

The Off-Street Parking Program in Pittsburgh

By JAMES McCLAIN and WILLIAM R. B. FROEHLICH*

PITTSBURGH is coming to be known as a city of progress—a better city in which to live. Since the end of the past war, Pittsburgh has cleared its notoriously dirty atmosphere of forty-five per cent of its smoke through a strictly enforced smoke control law. A new airport is under construction, a gigantic commercial redevelopment in the Golden Triangle has been announced, a 90 million dollar east-west expressway is under construction, and a remarkable off-street parking program is now entering the action stage.

The City of Pittsburgh is one of the first large cities in the country to grapple with its parking problem through the agency of a public parking authority. In August 1947 the State of Pennsylvania granted a charter to the Public Parking Authority of Pittsburgh, and Mayor Lawrence appointed five non-paid members to the Authority Board. Subsequently, in May of 1948 the legality of the Parking Authority was succesfully tested in the State Supreme Court through a friendly suit. The first action on the part of the Authority was to engage the engineering firm of Parsons, Brinckerhoff, Hall & MacDonald to make a thorough analysis of the feasibility of constructing six short-time parking garages in the central business district of the city, commonly known as the Golden Triangle. As a basis for its study the engineering firm used a Parking Study of the Pittsburgh Central Business District prepared by the Pittsburgh Regional Planning Association in 1946 and conducted additional surveys and investigations of its own. The study was completed in 1948 and was carefully reviewed by the Parking Authority. The Authority accepted the recommendations of the study with minor modifications and in May of this year announced that it was ready to proceed with the construction of its first group of parking garages.

Donald M. McNeil has been appointed Consulting Engineer and Acting Coordinator of the program by the Parking Authority in order to expedite this initial program. Mr. McNeil will continue as Pittsburgh's Traffic Engineer, dividing his time between the two positions.

Initial Program

The initial program will involve construction of four separate garages with space for 1,947 automobiles. Contract plans for the four garages will be prepared immediately and construction will begin as soon as possible. Two additional sites were recommended, but construction plans for these will be deferred for the present.

The parking rates of all six of the proposed garages will be adjusted so that they will attract the short-time parker. Proposed rates step up sharply after the third hour. Under such a schedule long-time parkers will be discouraged from using the garages operated by the Authority and will be deflected to existing commercial garages and lots. The Authority feels justified in planning to accommodate short-time parkers in its initial program because the 1946 Parking Study indicated a large unfulfilled demand for such parking facilities. Later, from the proceeds of the short-time garages, the Authority plans to build long-time parking garages near the perimeter of the central business district.

Construction cost of the first four garages is estimated at $4,500,000. Construction will be financed by Revenue Bonds to be issued by the Authority. In order to make more certain that there will be enough revenue to float the bonds, the City of Pittsburgh has assigned to the Authority the proceeds of the city's parking meters when and if needed. The parking meter revenue averages about $100,000 per year.

The first four garages will be open deck type structures from three to five stories in height. Garages will be attendant operated. Ample reservoir space will be provided for incoming and outgoing cars.

Deferred Program

In addition to the four sites recommended for immediate construction, two additional garage locations have been proposed by the Authority for construction after the garages included in the initial program have been completed. Both of these garages will be short-time facilities with attendant parking.

City Park and Underground Parking Garage

A city park and underground parking garage will be constructed on one of these deferred sites in the block bounded by Sixth Avenue, William Penn Place, Oliver Avenue, and Smithfield Street (Fig. 4). This unique facility is made possible by a gift to the city of four million dollars by three Mellon Foundations; the gift is to be used for the purchase of real estate and development of the park. The Public Parking Authority will finance construction of the underground parking garage which will amount to another four million dollars.

The underground parking garage is designed for a

*Pittsburgh Regional Planning Association, 1308 Keystone Building, Pittsburgh 22, Pennsylvania.

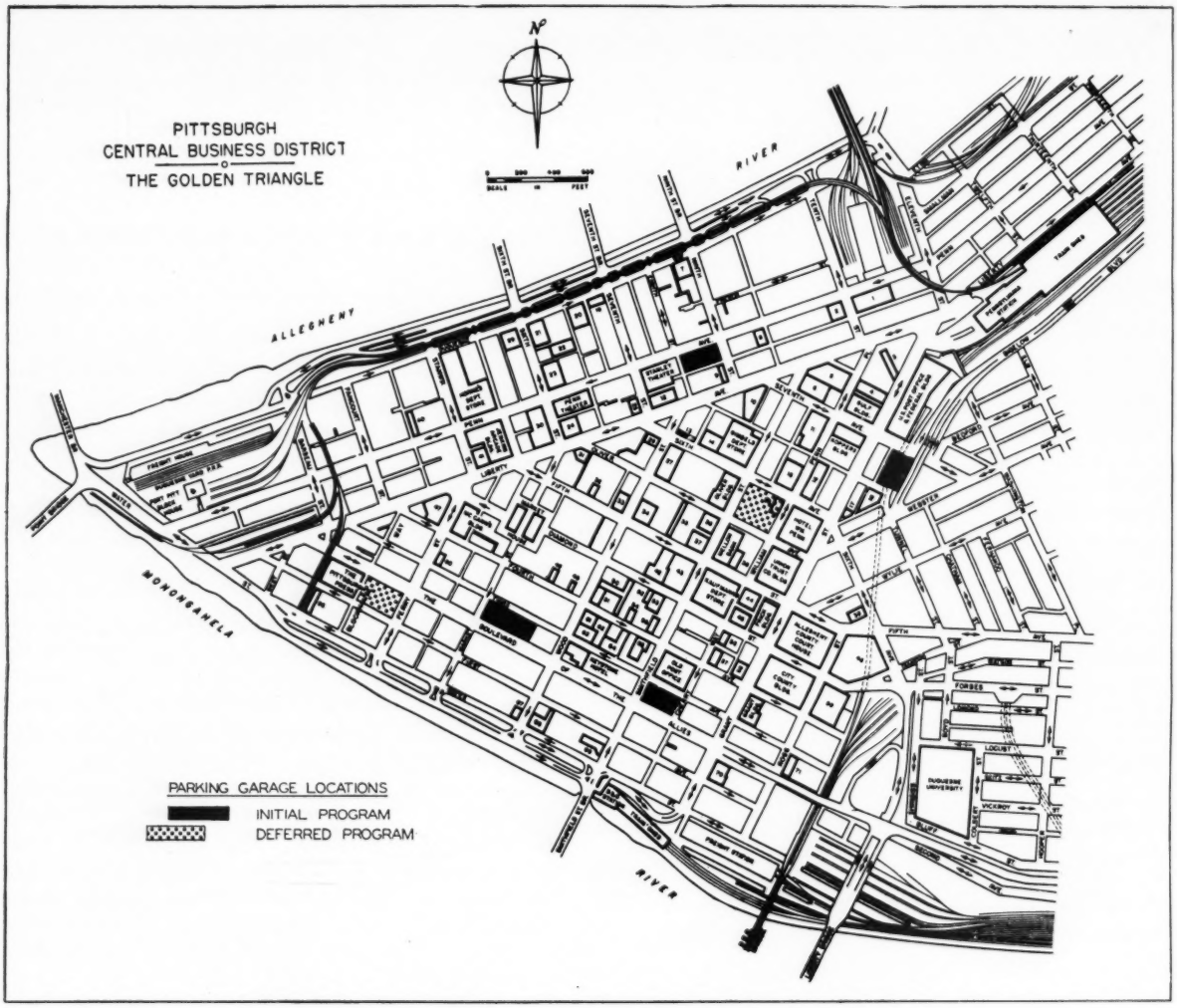


Fig. 1—Map of the Golden Triangle showing six proposed preliminary garage locations.

total capacity of 1090 car spaces, 790 of which are to be used for short-time parking and 300 for all-day parking. Recent comprehensive analysis of the parking demand of the whole Golden Triangle have established the fact that these capacities are needed at this location as of 1950. Since these calculations do not include the additional parking demand which will be generated by the proposed store enlargements and new office buildings adjacent to the site, it is certain that the garage is not over-designed.

The design of the garage structure is a "stepped level" or "staggered floor" scheme with the equivalent of five floor levels. This design incorporates the following features:

a. Unusually ample reservoir space for incoming and outgoing cars, each reservoir being three lanes wide and having a capacity of 21 cars. The reservoirs are so located that the outgoing reservoir may be used for incoming storage during periods of abnormal inflow. Additionally, extension of the ramps from the rear of the ground floor to the center of the building at the basement level allows an increase of reservoir capacity during emergency periods.

b. From the basement level and down, circular ramps continue on the center line of the building—the most efficient location to serve the storage area. Ramp grades do not exceed 7.5%.

c. The generous size of parking stalls, 7 feet 10 inches by 18 feet, permits safe parking of large modern cars, and in no instance are cars parked more than two deep. Aisles are generally 22 feet wide.

d. Two lines for car washing, each to accommodate three cars simultaneously. Also two hydraulic lifts for car lubrication.

e. A large public waiting room with cashier's office and concession stand for news, candy, and tobacco sales. Adjoining the waiting room are the public comfort stations and a sales and service room of approximately 800 square feet in area. The vertical sliding poles and man-lifts for attendants, as well as employee lockers, toilets, showers, and lunching

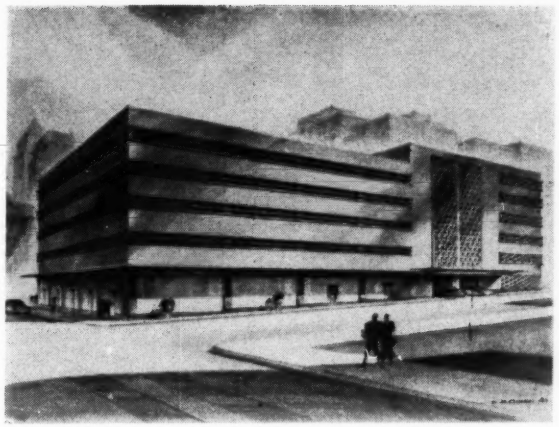


Fig. 2
Preliminary design of the garage to be located at the corner of the Boulevard of the Allies and Smithfield Street. The Parking Authority plans to use commercially valuable frontage for shops, restaurants, etc., in order to get additional revenue.

space, are also located adjacent to the waiting room.

f. An internal system of protected pedestrian tunnels and walkways with access to the waiting room from Smithfield Street, the park plaza, and the four buildings facing the underground garage block. At no time will it be necessary for garage patrons to cross traffic lanes.

g. Two exhaust ventilation fan rooms giving ample ventilating capacity. Fresh air will be supplied at floor levels.

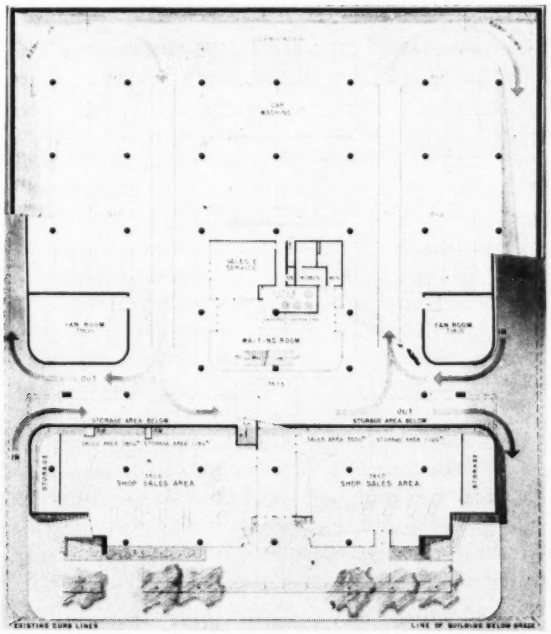


Fig. 3
Ground floor plan of the "Parking Park". Shops are in the foreground. Waiting room, sales and service facilities are concentrated at the center with reservoir space on either side.

To provide maximum storage at the lower levels, the underground structure extends approximately to the curb lines of the surrounding streets. Above street level, however, the structure is reduced in width to provide an additional traffic lane on both Sixth Street and Oliver Avenue for the full length of the block from Smithfield Street to William Penn Place. Cars entering or leaving the garage will use these extra lanes, thus permitting the existing traffic lanes to function uninterruptedly. These extra lanes will lessen the possibility of congestion at the garage entrances and will help avoid accidents.

An important feature of the design is the elimination of sidewalks from both Sixth Avenue and Oliver Avenue sides of the structure. Ample walkways are provided in the park plaza for pedestrian movement between Smithfield Street and William Penn Place. The elimination of these sidewalks removes pedestrian interference from the garage entrances.

Commercial Development

The topography of the site—Smithfield Street being 12 ft. or 13 ft. lower in elevation than William Penn Place—is particularly well adapted to accommodate the several shops which are provided along Smithfield Street.

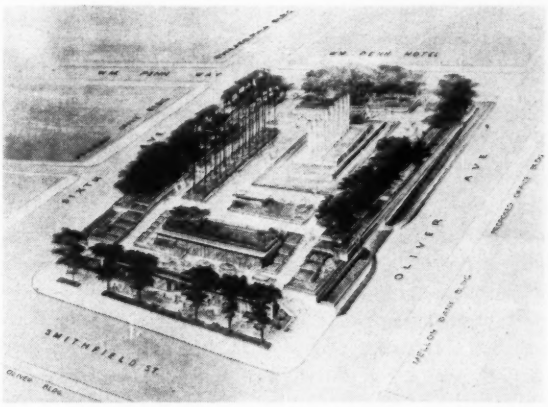


Fig. 4
Perspective view of City Park and Underground Parking Garage. Automobile entrances and exits are located about mid-block on Sixth and Oliver Avenues.

The desirability of maintaining the continuity of commercial development along heavily commercialized Smithfield Street is recognized. Besides, the rentals obtained from these shops will strengthen the economic base of the entire project, giving greater opportunity for profit to the Parking Authority. A terrace cafe is provided directly above the shop level. This cafe is intimately related to the Park Plaza by further set-back, and a large landscaped terrace in front of the cafe offers a most desirable setting for outdoor dining. Additionally a restaurant and cafeteria are proposed at the basement floor level, underneath the shops.

The Park Plaza

The design of the Park Plaza takes full advantage of the topography and setting of the site without impairment

(See OFF-STREET PARKING, *page 84)*

Highway Traffic and Operating Problems Involved in Truck Transportation

By DWIGHT M. McCRACKEN (Mem., ITE)*

THE comparatively recent growth in truck transportation has created problems of disturbing urgency for today's traffic and highway engineers. When trucks comprised but five per cent of the traffic stream, streets and highways could be designed or redesigned and traffic regulated with little thought for the 1-in-20 oversized, slower-moving vehicle,—except at points of unusual truck concentration. Today, however, when every fifth vehicle is a truck, the need is critical for careful planning to coordinate freight and passenger car traffic. Commissioner Thomas A. MacDonald, in his 1948 Beecroft Memorial Award lecture, emphasized the urgent need for more attention to the problems created by the faster growth of trucks than automobiles. He quoted latest Bureau of Public Roads studies showing one truck for every 4½ passenger cars. In 1948 while all traffic mileage increased eight per cent, truck mileage increased 10 per cent.

DeLeuw, Cather, Inc., traffic and transportation consulting firm of Chicago, has just completed a traffic and transportation report for the city of Milwaukee which states that, although only 11 per cent of the city's registered vehicles are trucks, origin and destination studies show that 24 per cent of the trips to and from the city's business areas are made by trucks. The report estimates that the number of trucks will double within the next twenty years.

Mr. O. K. Normann[1] indicates that a truck has an effect on the traffic stream equivalent to that of two passenger cars. On this basis the effect of the truck traffic in Milwaukee's arterial traffic streams is equivalent to trucks comprising 35 to 40 per cent of the traffic stream. Inasmuch as a substantial portion of the 76 per cent of passenger car traffic operates over parkways and other streets where trucks are excluded, the DeLeuw, Cather study points out that on those streets used by trucks, the proportion of trucks to passenger car traffic is probably greater than the 35-40 per cent previously mentioned.

When we consider that the cost per mile in terms of driver wages and other truck operating expenses is greater than the cost per mile for the average passenger car, we begin to see the relative importance of facilitating truck traffic in its true light. The traffic engineers' problem of balancing the convenience of passenger car traffic against commercial traffic involves increasing emphasis on the expediting of truck transportation, rather than the minor emphasis which results in circuitous truck routing around congested areas on comparatively narrow and hazardous streets with frequent right angle turns.

There seem to be two basic schools of thought on the problem of coordinating freight and automobile traffic. One school believes that trucks have no place on our streets and highways because of the hazard and inconvenience caused to passenger car drivers. The other believes that trucking would not have increased to its present proportion in so relatively short a period if it were not economically advantageous to shippers and consignees alike. They, therefore, conclude that the 'truck is here to stay' and the problem should be faced squarely as to ways and means of coordinating the two types of traffic for maximum safety and minimum inconvenience—consistent with proper weighing of the relative importance of the two types and with the available street and highway facilities.

The realistic attitude of the second school would seem to be the wisest course for traffic engineers and traffic authorities generally. When we consider that, even in New England, which has the most intensive and extensive system of rail and waterways in the country, more than half of the commodities used are hauled all the way by truck, it seems apparent that truck transportation is here to stay and will probably increase rather than diminish. Nor is it likely that such transportation will be confined to local and short distance hauling. In the textile industry, Southern textile mills are able to ship processed goods to the New York garment factories on a Monday night and get back the finished garments on the counters of their consignees for Friday sale. The railroads receiving processed goods on Monday night are only able to deliver them to the garment manufacturers in New York on Friday morning. Small wonder that the shippers and consignees who dislike to carry large inventories patronize the motor carriers on this thousand-mile haul. In 1939, 80 per cent of textile shipments moved by rail and 20 per cent by truck. Shortly after the war this had changed to a 65-35 distribution, and now in 1949, it is running 50-50.

*Assistant Vice-President, Manager, Motor Transport Bureau, Liberty Mutual Insurance Company, Boston, Massachusetts.

[1]O. K. Normann, Chief, Section of Traffic Operation, Division of Highway Transportation, Bureau of Public Roads.

The Bourbon Stock Yards in St. Louis ship 90 per cent of their live stock by truck. Lambs are shipped to the Cudahy Packing Company in Milwaukee by truck in 24 hours. If rails were used it would take so much longer that they would have to stop to unload and water the stock and reload because the law does not permit retention of live stock in transit longer than 36 hours. Also, the longer live stock is kept in transit, the more weight it loses. Monday is a big day in the Chicago stock yards. Trucks get the cattle in Sunday night so that they may sleep in pens, look better, and bring a higher price Monday morning whereas by rail they are shunted around in cars throughout the night in order to reach delivery destination in time for Monday morning.

These illustrations involve only two industries, but when we multiply these typical examples by the large variety of commodities being transported, it seems irrefutable that truck transportation must be recognized as a vital, essential, and important part of today's traffic streams which must be dealt with thoroughly, intelligently, and fairly by traffic engineers.

Responsibility of Highway Carriers

Needless to say the highway carriers must pay for their growth by a collateral growth in their responsibility to other users of the highway. They must offset the increased number, size, and weight of their vehicles by better equipment, maintenance, and drivers in order to avoid increases in accidents, congestion and delay. That they are aware of this responsibility and making every effort to meet it is evidenced by the following:

1. Thirty-two universities throughout the country conduct Motor Vehicle Fleet Supervisor Training Courses annually where a total of well over 1,000 fleet safety supervisors study safety and efficiency of truck operations for a full week. These courses have been so well attended by trucking supervisors that they have grown in size, importance, and number of universities for the past seven years until this year they are hitting an all time high.

2. The American Trucking Associations together with the National Association of Motor Bus Operators and my own company are sponsoring a three-year Motor Transport Accident Prevention Research Project just now starting at Harvard University School of Public Health. The purpose of this research is to probe beyond the present known and proven methods of motor transport accident prevention to find some of the more basic causes which produce serious accidents in spite of full application of what is now known. For example, it is known that drivers have more accidents during the first three hours on duty than during any other three-hour period of their driving shift, but until we know *why* this is true, we cannot get at the basic causes of accidents during this critical "warm up" period. The individual selected to conduct this research, Dr. Ross A. McFarland, has just completed similar studies for the airlines which are proving extremely valuable.

3. The trucking industry through its Insurance Advisory Committee is developing Minimum Standards of Loss Prevention, the adoption of which will be urged jointly on the country's trucking companies by members of the American Trucking Association and insurance fleet safety engineers and underwriters.

Problems of the Traffic Engineer

In spite of all that the truck operators can do in providing sound equipment and safe, courteous drivers, the mere physical presence of 7,000,000 trucks concentrated on intercity truck highways and arterial city streets creates problems of highway design, regulation and control of all types for traffic engineers and traffic officials.

These problems on city streets, including loading and unloading, were covered to the best of my limited knowledge and capacity by my paper at the 19th Annual Meeting of the Institute of Traffic Engineers last year in Philadelphia, and will be found in the ITE Proceedings for 1948 under the title "Ways and Means of Reducing Truck Loading and Unloading Congestion on Downtown Streets."

At the present time most of the concern over truck hazards and congestion expressed by the American Trucking Associations, the Institute of Traffic Engineers, the Transportation Department, United States Chamber of Commerce, and others centers about our cities, but the problem exists on the open highways too. In fact whenever two vehicles try to occupy the same space at the same time, it might be said that the congestion is terrific. However, without going to this extreme, we still have a very real congestion problem on our highways which is causing accidents of the more severe type as well as irritating delays.

Trucks Stopped on Highways

We are all familiar with the back-surge of traffic that occurs on a busy highway when a truck is stopped with its entire width, or even part of its width, on the travelled portion of the highway. Our company's claim files will show that this situation is involved in the more serious types of highway crashes, and the traffic behavior studies of the U. S. Bureau of Public Roads show it to be a major cause of highway delays. This problem seems analogous to the problem of the railroads in coordinating the movement of freight and passenger traffic over the same roadbed. Railroads have, through careful planning, placed turnouts or sidings so strategically that the slower moving freight trains seldom delay the passenger trains. Should we not give more attention in our highway planning and design to the provision of turnouts for disabled trucks which require firm support for their greater weight? Where highway alignment is such as to involve short sight distances, this is of particular importance. The placement of warning flares by disabled trucks in no way relieves congestion and delay to other traffic and does not even prevent deadly rear-end collisions or head-on collisions. You would be surprised to review insurance records of read-end collisions and head-on collisions where the approaching vehicle has run over the pot torches. It seems if trucks are to be with us in present and even greater abundance on our highways, we will have to make better provision for getting them off the highway entirely rather than relying upon flares to warn traffic of their

presence. The frequent occurrence of roadside business establishments of all sorts alleviates this problem to some extent but there are still long distances between such establishments with no turnouts whatsoever and with narrow or soft, unimproved shoulders.

With regard to enforcement—parking on the highway, except when disabled, should be prohibited and violations should receive strict prosecution. As long as a truck is able to continue in safety, it should confine its stops to spots where it can be entirely removed from the travelled portion of the highway.

To facilitate enforcement of this principle, it seems to me that highway engineers might give thought to the frequent posting of large signs reading "No Parking on Highway" in much the same manner as signs are now erected "Keep Right Except When Passing."

Differentials in Speed

In order to alleviate the congestion caused by differentials in speed between truck and passenger cars, still greater expansion of the speed zoning or "posted speeds" system and more highway mileage should be considered. The provision of maximum sight distance consistent with terrain and project funds is also important.

Extra lanes on the right hand side of long upgrades is another development we may see more of in the future. Route 20 through New York State has several examples of this type of treatment which seem to be working very satisfactorily in preventing the usual long "queue" of traffic behind laboring trucks on the grades so treated.

Spacing Problem

The factors of trucks following one another too closely generates not only congestion but serious accidents. This is one of the traffic problems in the coordination of freight and passenger car traffic today. It is a practice very difficult to break up in long distance trucking because, no matter how widely spaced trucks are dispatched from point to origin, they have a tendency to "gang up" at coffee stops or traffic delay points. It is also difficult to enforce proper spacing because it requires many miles of following to determine and prove in court that a truck is actually following rather than getting ready to pass. This is a very real and critical problem in truck transportation over our highways today. It seems to be a problem which rests upon the shoulders of driver education and training, and supervisory techniques.

Temporary Removal of Slow Motorists

We all know this is a free country and if a motorist wants to cruise along at 20 miles an hour on a high speed trunk highway enjoying the scenery, it is considered O.K. —but in this modern motor age, this can be just as dangerous and cause just as much congestion as a convoy of "tailgating" trucks. Some states have instructed their enforcement officials to relieve the situation by requesting such motorists to pull off and let the people pass and then resume their way. This could be done more by all state, county, and city enforcement officials on highways used predominantly for business travel. Speed zoning also helps to make slow motorists keep pace.

Controlled Access to Trunk Line Highways

The flow of traffic into main highways will always be with us, but traffic engineers and state highway officials are working as fast as funds permit to provide clover leaf grade separations, traffic circles and acceleration and deceleration lanes which will permit traffic to merge smoothly into the main highway traffic rather than enter it abruptly at right angles.

However, the great number of business establishments which line our highways and which fail to provide adequate off-street space to accommodate their customers are creating serious congestion points along our main routes. More can and should be done to control and design the location of roadside business places of all types so that truck and passenger car customers will not have to stop on the highway and can enter and leave the highway at easier angles and thus provide less interruption to traffic flow. The location of gas stations, restaurants, etc., at the apex of curves or the crests of hills is particularly dangerous because of the tendency of traffic to cross over to enter their yards when there is not sufficient sight distance to determine whether the movement can be made without risking head-on collision. Should not the aid of state and regional planning authorities be enlisted to draft zoning restrictions which would prevent location of roadside business establishments at points of inadequate sight distance? And how about the less complicated use of the police power for public safety in this regard? Truck insurance companies pay millions of dollars yearly for accidents of this type at poorly located diners or gas stations.

Conclusion

The traffic delays and hazards resulting from truck transportation have increased so gradually, along with the size, weight and number of trucks, that the public, the shippers, the truckers and the traffic officials have all come to take them as a matter of course. Remedial measures have been for the most part, sporadic and spotty—where the heat was on—rather than on a comprehensive overall basis.

With the rapid postwar increase in traffic, these problems have become more acute. In my talks with motor transport executives, I find that they are becoming as concerned about it as traffic officials and the general public.

Harold F. Hammond, Manager of the Transportation Department of the U. S. Chamber of Commerce has stated that "Commercial vehicle traffic problems are not receiving the constructive and careful attention from many communities that they deserve." Board Chairman, Mr. Buhner, of the American Trucking Association, in adressing the Commerce and Industry Associations of New York last year, stated, "The time to give this our best attention is *right now*. There is nothing in the future that is encouraging if we are to proceed on a hit-or-miss basis."

The time is ripe for traffic engineers and other officials to get together on more factual studies of the situation as it exists today and to prepare long range plans for better coordination between freight and passenger car movement.

Transportation Progress in Modern Italy

By CAMILLE L. FOLLIS*

To the best of our knowledge, this is the first feature article by a feminine author to be published in "Traffic Engineering" magazine. Miss Follis was in Italy for three months. Her interest in traffic engineering and transportation is evidenced by her comprehensive and thorough review of present-day traffic in Italy.

THE problem in most Italian cities today is not only one of facilitating traffic but one of achieving better ways and means of transportation. In light of Italy's economic and physical condition this is not an easy task and is one which will take considerable time and money. Italy's geographical structure, long, narrow and hilly, makes it exceedingly difficult for her government to build many super-highways and achieve an expansive network of highway systems with the limited funds available for such expenditures.

While it it generally true that her highway networks are not comparable to ours, there are some places and areas, particularly in the larger cities, where rather modern highway traffic facilities and controls are found.

Bicycle—the Common Carrier

The automobile is the main source of travel here in America. Not so in Italy. There the bicycle is the most common carrier. To the Italians, the bicycle is their automobile; their work, recreation, etc., are all carried on by this medium. One can go for miles in rural areas without seeing so much as one automobile. One can even go through four or five average size towns seeing but one ancient vehicle, generally used as the local taxi. Some of the farmers and peasants have never seen an automobile and still employ the horse and wagon method exclusively.

To the city man the automobile is no novelty, although the sight of an American car, be it Ford, Chevrolet or Cadillac, causes him to reflect on the inadequacy of their models.

Automobile production is drastically limited in Italy due to scarcity of materials and funds. This, in turn, makes it too expensive for the average citizen to buy an automobile and, with the high cost of petrol, too costly to run and maintain it. Even the small Fiats, called "topolinos" (little mice) which run approximately 35 miles to a gallon of petrol, are out of their reach. Therefore, the automobile which to us is a necessity, is a luxury to them.

The motorcycle is fast becoming popular in Italy. As most of the small towns have narrow, hilly roads, the motorcycle is about the most practical kind of vehicle for those who wish to travel cheaply and rapidly—with a minimum of comfort. Their average cost is $300.00, a little high for the average man but not so completely out of his reach as is the automobile.

The Italian Automobile

Reflecting a moment on the Italian make of car, they should not be compared with our large, comfortable, smooth-running vehicles. They are midget size with midget comforts. However, Italy is fortunate in having skillful engineers who are ingenious in the art of economy and have been able to put on the market a car that is simple in design and economical to operate (for those who can afford it). They travel at a high rate of speed with very little gasoline consumption. It is interesting to note that during the summer of 1922 the European press carried news of a great victory scored by the Italian automobile industry in the international competition at Strasborg. In competition with French and British machines, the Italians with a Fiat motor-car and a Garelli motorcycle, won first place, thus placing Italian motor vehicles in the front ranks for speed, simplicity and fine workmanship.[1] Italy has not been able to develop her industry during the past twenty-five years because of war damage to her factories and lack of funds to import needed materials.

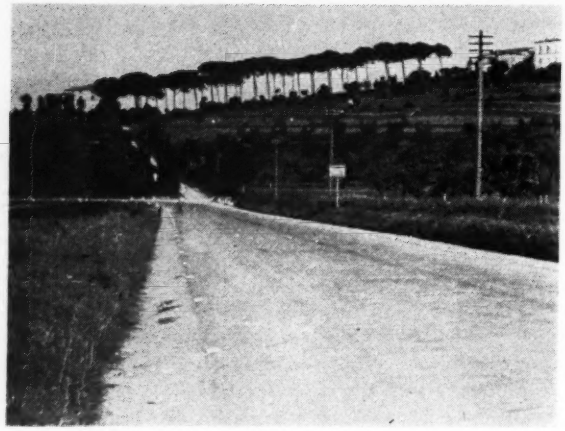
Condition of Existing Highways

One important factor to remember, however, is that although the Italian car can attain a high speed, the condition of the roads, with few exceptions, make it impractical to travel too fast. Their roads are not superhighways, or the smooth concrete highways that are so familiar to us. For the most part they are earth or asphalt roads in the rural districts and asphalt, brick or pebble surface roads in the urban districts. A black top road leading from Assisi to Perugia is shown in the picture.

Highways similar to our Merritt Parkway (Connecticut) and the Pennsylvania Turnpike are non-existent in Italy. Their main highways are little better than our secondary roads. They do have one excellent highway, built during the Fascist regime, which leads from Padova into the outskirts of the City of Venice. It is a long straight road in excellent condition. A toll is paid to travel this highway and bicycles are prohibited. An average speed of 50 to 60 miles is maintained on this highway, although

*Secretary at Yale Bureau of Highway Traffic.

[1] *Cooper, Clayton Sedgwick—Understanding Italy—The Century Company, 1923.*



one can go faster without too much fear of a penalty. The police seem to be more interested in fining bicycle "refugees" who sometimes escape the tollkeeper, than they are in the enforcement of the speed laws.

Traffic Control Devices and Regulation

Italy's streets and highways are comparatively well-marked insofar as directions and hazardous locations are concerned. Directional signs are like ours, being black legend on a white background; the triangular sign denotes danger and the circular sign is regulatory.

Parking meters are not to be found. If they should be utilized the public would have to be educated in their use and the government would have to issue special coins (there is no coin currency in Italy today) for such purposes; this would prove too great a demand on the Italians in their present condition. However, parking regulation signs are common. A "parking permitted" sign is a square blue sign with a large white P in the center. The "no parking permitted" sign is a round red sign with a white center. In 1931, a European Conference on Road Traffic was held at Geneva. Approximately 26 countries, including Italy, were represented. Mr. Mellini, Chief Inspector of the Ministry of Communication, one of the delegates, told the Conference that the Italian government had set up, at considerable trouble and expense, signs which were in conformity with those laid down in the draft convention and that they would do all they possibly could to enforce observance of these and other traffic regulations. As a general rule, they continue to adhere to uniform standards.

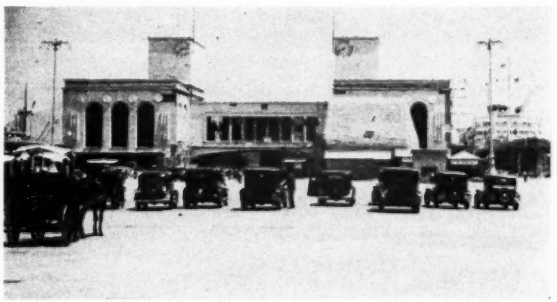
Naples, Milan, Rome, Genoa and many other large cities of Italy have also installed a pavement marking system. They use white paint lines for pedestrian crosswalks, and in some instances a penalty is imposed on pedestrians ignoring them.

In Rome where traffic is comparatively heavy due to a mixture of Italian and foreign cars (mostly American), buses, trolleys and pedestrians, there seem to be no definite driving regulations for many sections of the city. The general street layout is a pattern of wide brick streets ending in tremendous squares. The pedestrian literally takes his "life in his hands" every time he crosses one of these squares. This is especially true when one approaches the square of Piazza Esedra, a tremendous intersection with no lights, signals or policemen. Cars drive into the center of the square from every direction, turn left or right without warning, cross over, make "U" turns, and operate at a high rate of speed, etc., when they so desire. Oddly enough, the accidents between pedestrians and vehicles are at a minimum, undoubtedly due to the fact that a motorist can easily avoid a collision by merely swerving to another part of the square without danger of hitting anything.

Upon entering the business portion of the city, however, it is found that regulations are rigidly observed. The streets are wide and traffic is controlled by signals; the standard 3-lens type, red, yellow and green, with one or more faces for each approach to the intersection. At some of the main intersections, policemen direct traffic from the vantage point of a white concrete block in the center of the roadway.

Parking Regulation

Both angle and parallel parking are to be found in all Italian cities. In the vicinity of the huge squares found in most cities, angle parking is the general practice while in the business districts parallel parking is the most common method. The reason for this is simple. The size of the squares is such that angle parking does not limit street capacity, while in the business district parallel parking allows freer movement on the relatively narrow streets. However, volumes of vehicular traffic in a majority of these areas are not sufficient to justify serious consideration of angle versus parallel type of parking from the standpoint of expediting movement. Outside the city limits very little consideration is given to the enforcement of parking, as the supply or curb spaces available far exceed the demand. The photo taken at the Port of Naples will illustrate the capacity and actual vehicular use of a majority of the squares.

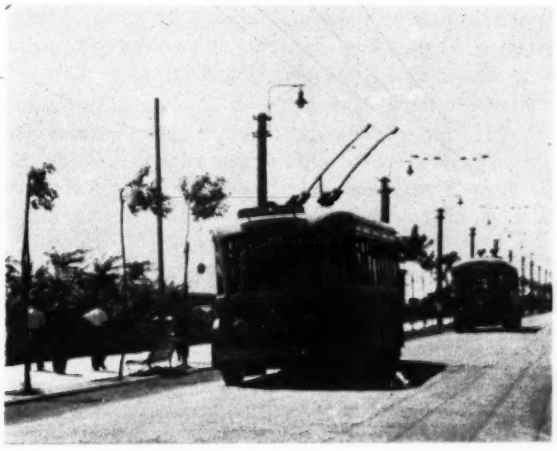


Mass Transportation

The "Autopullman", a sort of over-sized bus, is playing a major role in Italy's mass transportation system. Due to war damage to trains, tracks, and bridges, the railroad system leaves much to be desired and the bus companies have taken over a large portion of the passenger travel. These "Autopullmans" are comfortable and fast-running, and seats are usually reserved. Some have even gone so far as the installation of radios and rest-room facilities. Usually for long distances, say a 5 or 6 hour ride, the buses have special parallel routes over which they alone can travel, thus eliminating any delay which might be caused by other vehicles, bicycles or pedestrians. They

maintain a steady pace of about 45 mph. These buses have several advantages over the railroad trains: their fares are lower, the equipment is cleaner, the ride more comfortable, and over all travel time is much less. The few trains operating on Italy's damaged railroad system (in comparison to their great need) must travel by special routes, usually the long way around, and upon approaching certain hazards such as bridges under construction, curves, grades, etc., must cut their speed down to a snail's pace. Therefore, the "Autopullmans" with their direct and safe routes are fast becoming strong competitors to the railroad.

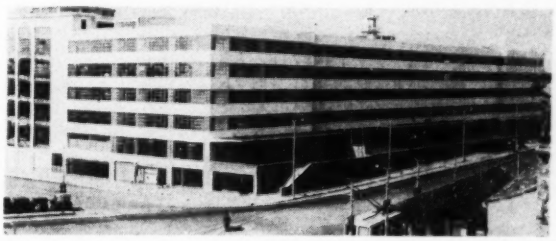
The trolley also plays an important part in the mass transportation system of the larger cities. Milan, one of Italy's largest industrial centers, and Genoa, a major seaport, use them extensively. Although many of the trolleys still operate on rails, a number of modern, trackless trolleys, as shown in the photograph below, are appearing on the scene.



The only antiquity remaining in the trolley picture is the use of two men on each vehicle. All passengers enter by the rear and pay a fare collector stationed there while the driver concentrates on operating the equipment. The disadvantage to this method is that a bottleneck is created at the collector's station by the passengers entering "en masse". The collector and his "box" occupy a lot of room which could be used to advantage by the passengers and further provides an opportunity for some to push forward without paying. When descending, the passengers can leave only by the front door.

Modern Development

All things considered, Italy is rapidly rebuilding and shedding the effects of the last war. Her transportation progress is particularly evidenced by the two new parking garages in Florence and Venice; beautiful, modern pieces of architecture with all-night service and extensive facilities for the repair and maintenance of vehicles. A person can leave his car in the garage at Venice for the small sum of 200 lire a day (40c), and monthly rates are quite low. A car is driven into the entranceway and is quickly and carefully moved to its storage location by a trained attendant. This six-story garage in Venice has other special



features, such as repairing and maintaining automobiles. Its main floor is devoted to specialty shops, including a restaurant and barber shop, which are added inducements to attract customers.

With all the odds against Italy, her extensively damaged cities, her ruined terminal and industrial facilities, her limited funds and physical layout, she is staging a fast comeback. This is evident when one sees the new bridges, buildings, and the steady reconstruction of its railroad system and seaports.

As with any other country, her transportation network is her lifeline, and Italy, realizing this, has already started plans to ameliorate her present system and perfect it in every way.

Over 150 Participate in New York University Traffic Courses

During the week of June 6, seven courses and conferences on various phases of traffic safety were held with the cooperation of the Center for Safety Education and the National Committee for Traffic Training. On June 10, 115 attended the luncheon at which certificates were awarded to 67 students who had completed the four courses sponsored by the National Committee, and to 31 others who had participated in the special seminar for college professors and supervisors.

Running concurrently, but not a part of the Institute, the Conference for Judges and Prosecutors at the University Law School enrolled 25, and the credit course in high school driver education 23—thus well over 150 individuals participated as students or instructors in the traffic training program during the early part of June.

While the program was suported by the entire membership of the National Committee for Traffic Training, the sponsorship of the various courses was provided by the American Automobile Association, the Northwestern University Traffic Institute, the National Committee for Traffic Safety, and the Center for Safety Education.

In addition, representatives of the Association of Casualty and Surety Companies, the National Safety Council, and the National Commission of Safety Education aided in the instructional program—while the American Bar Association and representatives of the Northwestern University Traffic Institute provided the staff for the Conference of Judges and Prosecutors.

Instructors and panel discussion leaders at the conference gave many comments on the quality of the groups in attendance in these courses.

A Study on Taxicab Stands

By LUIS GONZALEZ SOLER*

This article is based on material collected for a thesis by Mr. Gonzalez while he was a student at the Yale Bureau of Highway Traffic. The original of all student theses are on file with the Yale Bureau, but are not available for distribution.

THIS article contains a summary of the findings obtained from a nation-wide survey on taxicab stands. A questionnaire was sent to each of 197 cities of 50,000 population and over. These questionnaires were sent out in March 1948, and addressed to the Chief of Police. Answers were received from a total of 114 cities (58%).

The Taxicab Industry in the United States

The condition of the taxicab industry in the United States as shown by the number of taxicabs, their operation, number of companies, and methods of municipal control are discussed in the following paragraphs. Three main factors may be mentioned in relation to taxicabs, companies and population: first, city size; second, private passenger car ownership, and third, locality. In relation to these, the following facts were gathered from the questionnaires:

(1) The number of taxicabs per thousand population does not show any mathematical relation to city size. An attempt was made to relate population and number of cabs per unit of population in a graph form. The scattered points on the graph showed that no definite relation existed between the two. Cities of over 100,000 population, with a total of 19,297,000 persons, account for 24,844 taxicabs or an average of 1.287 cabs per thousand population. Cities of less than 100,000 population, with a total of 3,406,000 persons, account for 3,801 taxicabs, or an average of 1.12 taxicabs per thousand population.

The following cities are considered to have a larger number of taxicabs as compared to the average:

Washington, D. C.—8.8 cabs per thousand population

Columbus, Ga.—3.48 cabs per thousand population

Atlantic City, N. J.—3.05 cabs per thousand population

(2) There is no relation between private vehicle ownership and taxicabs as compared in vehicles per unit of population.

(3) The average number of taxicabs per thousand population for different regions in the United States show that: the Central North-west States, New England, and the Pacific West have the least number of taxicabs in that order. The largest ratio of cabs to population appears in the South-east and the Gulf South-west.

General Policies in Providing Stands on the Curb

The authority for designating stands is vested in the Police Department in most of the cities. In 44% of the cities the Chief of Police designates such stands with the approval of the City Council. Next to the Chief of Police or Police Department, the authority in designating stands rests with the City Manager, City Council, or other city officials and bureaus.

The largest percentage of cities cited necessity and demand as the main reason for providing taxi stands near the curb. The general trend to provide stands at the curb is given more strength by a resolution adopted at the Thirty-Sixth Annual Meeting of the U. S. Chamber of Commerce stating, "taxicabs should be encouraged to establish fixed stands and to install two-way radio communications, where desirable."

Of the 114 answering the question, 104 cities provide stands at the curb while 10 cities do not provide stands at the curb. Of these ten cities, some prohibit stands at curb and others go further by requiring off-street stands.

The following were the answers from cities providing off-street stands:

Bayonne, N. J.—"cabs are allowed to park at curb only in front of their office." (According to city ordinance

Taxi stand limited to the use of one company only, Hartford, Connecticut.

*Civil Engineer, Div. of Survey and Design, Dept. of the Interior, Puerto Rico.

stands may be provided at curb only with the consent of the abutting property owner.)

Charlotte, N. C.; Fort Worth, Texas; Austin, Texas; Columbus, Georgia; El Paso, Texas; Montgomery, Alabama; and Johnstown, Pa., require off-street stands as stated in their taxicab ordinance.

Schenectady, N. Y.—both off-street stands and curb stands are provided. The use of either one by a cab is specified in the license and the cab is provided with a sticker which states the place where the cab is to be parked.

Number of Stands

Of the 100 cities which answered this part of the questionnaire, 42 said that the number of stands is decided by public convenience, demand for service and public necessity. There is no definite rule or policy in relation to the number of stands. Some cities stated that the number of stands is decided by the number of cabs; for instance, Berkeley and Oakland, California, have one stand per taxicab and San Diego, two spaces per each three licensed cabs. In Miami, Florida, space is provided for 50% of the cabs in service, "the balance, cruising." East Chicago, Indiana, assigns one stand to each company.

In Louisville, Kentucky, the ordinance states that each company is alloted one space of eighteen feet per nine cabs. No company having less than nine cabs has the right to the use of stands. Their ordinance does not limit the number of stands in residential areas.

Size of Stands

The cab stall varies from 17 to 22 feet. Fall River, Mass., has 17 foot stalls at the end of stands, near intersections. Most cities have 20 feet space for each cab.

Thirty-one per cent of the cities have stands for two cabs only. Other cities have large stands to accommodate from seven to eight vehicles, according to demand. Portland, Oregon, and Saginaw, Michigan, have space for one cab only on their stands.

Signs and Markings

Of 100 cities, 96 use posted signs to indicate taxicab stands. Fifty-eight cities use curb markings in addition to signs. The sign legend varies little between cities. The most common is the standard "NO PARKING" sign with "TAXICABS ONLY" inscribed under it. Most cities add to these two phrases on the sign a statement of the number of cabs allowed for the particular stand.

The size of the sign is 12″ x 18″.

The color used on curb markings for stands is yellow although some cities use white and still others use red or orange.

Location of Stands

The responsibility for the location rests on the officials in charge of granting permission for the stands, yet this decision is based on the operator's or companies' requests. Fifty per cent of the cities base their decisions entirely on the companies' recommendations, stating that the taxicab operators know best "the location where the demand is higher."

Special provisions in relation to theaters are found, viz:

(1) Near or in front of theater but without blocking the entrance or interfering with the free movement of people, 35% of the cities.

(2) From one to two blocks within the neighborhood, 10% of the cities.

(3) Definite limitations—from 15′ to as high as 100′ from entrance.

(4) Do not allow stands near theaters: Jackson, Mich.; Rochester, N. Y.; Malden, Mass.

Stands are provided as close to hotels as possible. Every city answering this question mentioned hotels as a major factor in deciding the location of stands. Very few cities made any definite statements in relation to limitations or controls in relation to hotels. In the majority of cities stands are provided near the entrance to hotels, while in some cities stands are provided within one to three blocks distance from the hotels. Rochester, N. Y., and Dallas, Texas, allow stands only at the side entrance to hotels.

Wide variations were found in relation to the question concerning location relative to street corners. The minimum distance allowed varies up to 100 feet from the corner. The largest percentage of cities grouped in one single classification as to distance from corner was 27% of the cities—25 feet from the corner.

Other limitations as to distance from corner were found, in San Diego, California—"16′ from crosswalk approach, 8′ beyond crosswalk"; Houston, Texas—middle of the block; Omaha, Nebraska—20′ from corner on congested area and 30′ from corner on other areas

Rules and Regulations For Loading and Unloading

Forty-five stated that there are no limitations on receiving and discharging passengers. Other rules follow as quoted from the answers received:

Mount Vernon, N. Y., and San Antonio, Texas—"limited to the capacity of the cab according to the manufacturers standards."

Minneapolis, Minn.—"no group loading."

Norfolk, Va., and Macon, Ga., limit the capacity to five passengers while Bayonne, N. J., allows only four passengers excluding the driver.

Atlantic City, N. J.—"One fare per cab."

Detroit and Flint, Mich.—"Passenger has the right to take any cab."

Washington, D. C.; Gary, Indiana, and Pontiac, Mich—"Passenger must take first cab."

Miami, Fla., and Toledo, Ohio—"First cab must accept passenger."

The general rule for receiving and discharging passengers is exemplified by a paragraph taken from the Indianapolis questionnaire:

"No taxicab standing at the head of any such stand shall refuse to carry any orderly person applying for a taxicab who agrees to pay the proper fare."

Another such general rule is that in effect at St. Louis, Mo.:

"As soon as car gets fare, must leave stand . . . . should not wait for more passengers to load the car."

Most cities have regulations which are not included in the taxicab ordinance and which are a part of the

Traffic Ordinance covering the operation of stands in relation to cabs entering and leaving the stand. In regard to this, the following statements by city officials are quoted:

"Observe traffic regulations on entering and leaving the stand—10 cities follow this policy.

"With traffic flow"—17 cities.

"Usual manner as parking"—11 cities.

"Rotation, first in back of stand, enter on rear and leave on front, first in first out, etc."—25 cities.

Some cities have a taxicab dispatcher who controls the operation on stands. Such is the case in Roanoke, Va., as well as in Dallas, Texas.

A very interesting rule is found in Memphis, Tennessee, "Cab line at the rear loads and leaves, other cabs back up leaving front space vacant for incoming cabs."

In Corpus Christi, Texas, where off-street stands are required by city ordinance, cabs must enter and leave stand "on right turn only." This avoids interference with traffic as would be the case of left turn into stand interfering with opposing traffic.

Pittsfield, Massachusetts, has two different kinds of curb stands: (1) Where cabs park parallel to curb and (2) where cabs park at an angle to the curb. The cabs are required to enter and leave the stand in the usual parking manner but the "way in which the cab is to park is specified in the license."

Of 100 cities which answered the question with regard to soliciting, 51% said that soliciting is permitted in their stands. Most cities failed to specify what manner of soliciting they do allow, but some cities stated that is allowed only when it is in an orderly manner and while the driver is inside the cab. No reference was made as to whether soliciting was permitted to be done by somebody else besides the driver, either a dispatcher or starter. Forty-three per cent of the cities stated that soliciting is not allowed in their stands.

In relation to cruising, it is clear that cities are paying more attention to the elimination of this practice. Sixty-five per cent of the cities have sections in their ordinances which expressly forbid this practice. Most cities where cruising is allowed also permit soliciting.

Use of Stands

Private vehicles are not allowed to use any of the stands in the cities surveyed. The only time private vehicles are allowed to use the stands is to load and unload and only to stop in the stand; they are required to move out immediately.

Of 106 cities, 60 replied that different companies are allowed to use stands, while 46 stated that stands are used by only one company. Of these 46 cities, Omaha, Nebraska, has permanent stands assigned to each company for the exclusive use of that company; Springfield, Mass., has three cab spaces in their stands in front of hotels on which three different companies are allowed to wait at any time but at no time shall anyone of the companies have more than one cab in the stand. East Chicago, Indiana, has one space to each company in their stands; Elizabeth, N. J., one space for each cab (permanent space) and Cedar Rapids, Iowa, has open space for any company. Hartford, Conn., has both types—open to all companies and limited to one company.

(See A STUDY, *page 84)*

Off-street taxi stand in Wichita, Kansas.

OUR TRAFFIC LIGHTS

by RONALD SYME*

America is trying to sort out her traffic problems in a scientific manner. Britain, however, is handicapped in this respect.

There is in the U. S. A. an Institute of Traffic Engineers whose members give expert advice to the men who build the roads. Such advice includes the highly technical subject of the location and timing of traffic lights.

In Britain the attitude is of the hit-or-miss variety. As Colonel D. C. McLagan, Chairman of the Road Traffic Study Group, recently said, "Traffic is nobody's business." The British Road Federation mentions another case where a City Engineer blandly stated that he "had more important things to do than see that traffic operated as efficiently as possible."

No British Institute of Traffic Engineers exists, yet Britain has more vehicles per mile of road than any other country.

Traffic lights are erected throughout the country by hundreds of highway authorities, many of whom are equipped with little more than the best of intentions. True, there are areas such as Bermondsey, where, until recently, the Council preferred to get along without any traffic lights at all. Elsewhere, the police are consulted, the local road engineer may make recommendations, and even a private citizen may succesfully clamour for traffic lights at the end of his street. But there is no guarantee that any of these people have scientific knowledge of traffic problems.

One day, perhaps, Britain will set up an Institute of Traffic Engineers of her own. When this happens, there will be no excuse for our traffic lights continuing to waste unnecessary petrol, time, tyres and vehicles.

***Public Relations Officer, British Road Federation, Ltd.**

Reference Notes

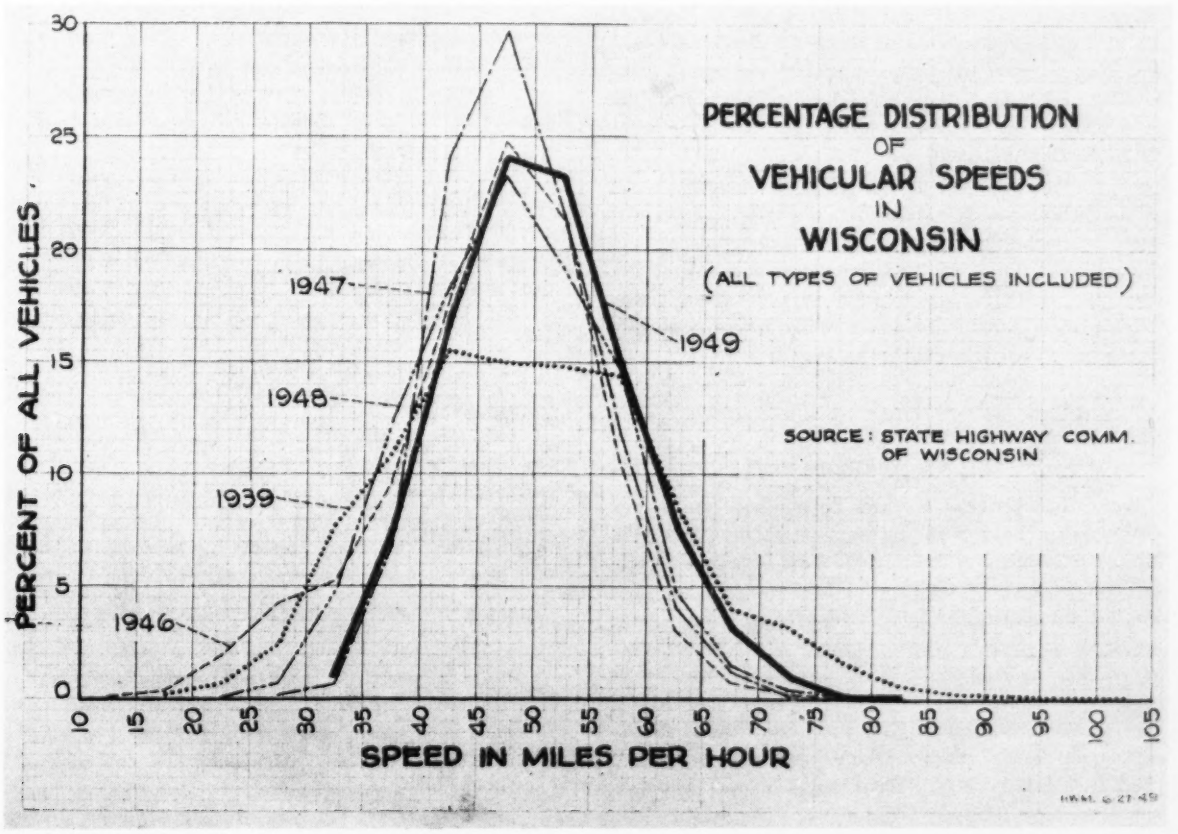
by WAYNE N. VOLK
Traffic Engineer
State Highway Commission
Madison, Wisconsin

The average speed of 50.7 mph for all vehicles as checked at fifteen typical locations on Wisconsin highways during June 1949 is the highest average vehicular speed ever recorded at these stations. The survey which was made during the first two weeks in June shows that the average speed for each class of vehicle was higher this year than it was last year, and, with the exception of a few instances higher than the average speed ever recorded in the respective classifications. This increase in the average speed in each class of vehicles was apparent at most of the locations at which the speeds were checked. The summary shown above shows the average speeds for various classes of vehicles for the past several years.

Date	Wisconsin Passenger No.	Wisconsin Passenger Speed	Foreign Passenger No.	Foreign Passenger Speed	Heavy Trucks No.	Heavy Trucks Speed	Total Vehicles No.	Total Vehicles Speed
1938-39	7641	49.5	1856	56.7	990	39.9	10199	49.8
November, 1942	3821	37.1	753	38.6	670	35.9	5244	37.1
June-July, 1943	4212	39.2	674	42.2	1101	38.5	6464	39.4
March-April, 1944	3876	41.7	502	45.3	973	40.0	5799	41.6
May, 1945	4271	42.7	734	46.5	979	40.3	6398	42.7
Sept.-Oct., 1945	1167	47.3	648	49.0	244	39.8	2183	46.8
May, 1946	4447	47.8	1895	51.1	1074	42.7	7801	47.8
May, 1947	5327	48.4	2307	52.8	1403	44.4	9841	48.7
May, 1948	5217	48.3	1609	52.7	1316	42.6	8579	48.1
June, 1949	4153	49.9	1665	55.0	834	46.7	7095	50.7

The average speed of heavy trucks has the highest percentage increase of any classification. During the last survey the average speed of heavy trucks exceeded the average pre-war speed of this class of vehicle by almost 7 miles per hour.

Although the average speed of vehicles is higher than the pre-war figure, the 1949 study shows lower top speeds than in 1939 and also fewer vehicles in the high speed brackets. A total of 12.6% were found to be exceeding 60 mph in 1949 as compared to more than 18% in 1938-1939. The 1949 study also revealed that there were fewer slow vehicles. During the last survey the speeds ranged from 30 to 85 mph while in 1939 the recorded



speeds varied from 15 to 105 mph.

The increase in the average speed is mostly due to the lack of slow moving vehicles. The 1939 survey shows 11% of the vehicles traveling below 35 mph while in 1949 only one per cent of the vehicles were recorded below that speed.

The last survey also shows that there were more drivers traveling between 45 and 60 mph than ever before. A total of 62.4% were recorded in that speed range during 1949 while only 44.2% were recorded between those speeds in 1939.

The chart shows the percentage distribution of the speed of all types of vehicles for the years 1939, and 1946 through 1949.

—o—

"Reference Notes" is proving one of the most popular features of "TE" magazine. Many readers are preparing a separate volume by placing this page in a looseleaf notebook. We can continue this feature only so long as material is available. Our supply is limited. We will welcome new and interesting items for this important section.

OFF-STREET PARKING . . .

(Continued from page 73)

to the utilitarian functions of the underground garage and the shops. The sloping terraced arrangement permits maximum view of the park from surrounding streets and buildings as well as access to the Plaza. The Park Plaza composition is informal in character. It avoids the heavy monumentality and stereotyped symmetry usually associated with such projects. It attains an intimate and human scale, inviting and restful. It provides for constantly changing perspective views rendered colorful and alive with fountains, planting and flags, etc.

This "Parking Park" project fulfills two long-felt needs of the Golden Triangle, Pittsburgh's central business district. It supplies spacious off-street parking capacity and provides recreational facilities, through an intimate downtown park. This project, together with the many others that are under construction or are being planned, will truly help make Pittsburgh a better place to live.

A STUDY . . .

(Continued from page 80)

Eighty-four per cent of cities do not have any stands where a time limit is set on their use. Some cities have definite regulations in limiting the time of use of stands; e.g., Washington, D. C., Detroit, Michigan, Kansas City, Mo., Pittsburgh, Pa., and Schenectady, N. Y., "cannot" park in stands on streets where parking is prohibited during certain hours, comply with parking regulations in general;" Rochester, N. Y.—"some stands are allowed 24-hour service, while others have time limit posted in the sign at the stand;" Toledo, Ohio—"some stands effective from 7:00 A.M. to 6:00 P.M., other 24 hours a day, time stated on sign;" Seattle, Washington—"one stand, with night demand, is in operation only from 6:00 P.M. to 6:00 A.M."

Charges for Stands

Of 99 cities answering this question, 82 stated that no charges are made for stands. Seventeen cities charge for the use of stands.

Mount Vernon, N. Y.—a $6.00 annual license fee allows the taxi to operate from any taxi stand in the city.

Austin, Texas,—"where off-street stands are required by city ordinance, terminal facilities' owners pay a license fee for the terminal."

Kalamazoo, Michigan—"license fee on cabs includes cost of maintenance of stands."

Omaha, Nebraska—"$2.00 per foot direct fee."

Berkeley, California—"$5.00 per month per cab space in Parking Meter Zones only."

San Francisco, California—"$2.00 direct fee payed quarterly."

San José, California—"$10.00 per space per month."

Baltimore, Maryland—Charges $7.00 for the cost of erection of signs and the painting of curb on the stands.

Portland, Oregon—initial fee of $20.00 and subsequent fees of $15.00 per year. (This is earmarked for payment of the maintenance cost of taxi zones and stands.)

Fines and Penalties

Although a question in relation to penalties and fines was incorporated in the questionnaire, very few cities gave any information at all in relation to this.

Fines and penalties follow very closely those established by city ordinance for other traffic elements. The common procedure of "tagging" vehicles for illegal parking, revocation of license, etc. was mentioned.

Minneapolis, Minn.—warning for first offense; suspension of license for further offenses; revocation of license for continued violations.

Columbus, Ohio, Peoria, Illinois, Washington, D. C., and Jacksonville, Florida—Parking ticket for the use of stands by private vehicles; fine from $1.00 to $3.00.

Lawrence, Massachusetts — repeated cruising — suspended license.

Flint, Michigan—cruising—guilty of obstruction to traffic.

Detroit, Michigan—overloading—$2.00 fine.

Summary

The taxicab industry is a very important user of our city street systems. The loading and unloading of passengers at the curb is an essential part of taxicab operations which must be given consideration in the regulation of urban traffic. This study presents the existing regulations now in effect in a majority of American cities.

The French Government has approved a plan for a road tunnel under Mont Blanc which will link Chamonix in France with Courmajeur in Italy. The tunnel will probably take nearly three years to complete. It will be seven and a half miles long, have a roadway 19½ feet wide and two footpaths.

OTHER TRAFFIC NEWS

DARK STREETS ARE DANGEROUS

by EDMUND C. POWERS

Don't make the mistake of thinking you're safer in night traffic just because the traffic is lighter!

That mistake may prove fatal!

Actually, night traffic is much more dangerous than daylight, even though only a third as many vehicles are operating. Proof of this lies in studies just completed by The Street and Traffic Safety Lighting Bureau of reports from 14 states covering 353,659 accidents for which light conditions were reported.

The Bureau said its study shows dark hours 38 per cent safer than daylight in respect to *total number of accidents* but 40 per cent more dangerous when *fatal accidents* are taken into account. This means you are much more apt to be killed in a night accident than in one that happens in daylight.

Night accidents reported by the 14 states totalled 136,244, according to the Bureau. This, the Bureau pointed out, is 38 per cent less than the 217,415 which were reported for daylight.

The Bureau's statement said that 2,895 fatal accidents were reported for darkness, pointing out that this figure is 40 per cent higher than the 2,065 fatal mishaps reported for daylight.

A tabulation accompanying the Bureau's statement shows that only 38 per cent of the 353,659 accidents occurred at night but that 58 per cent of the 4,960 accidents which were fatal occurred at night.

The chief cause of the higher fatality rate at night, the Bureau contends, is inadequate visibility due to insufficient light. It says the lack of enough light makes it impossible for drivers and pedestrians to see fatal dangers in time to save themselves.

City traffic is particularly dangerous at night as evidenced, the Bureau says, by the fact that two-thirds of urban fatal accidents occur after dark.

Evidence that poor visibility is the chief contributing factor in the high night fatality rate is seen, the Bureau says, in reports from cities which have relighted their streets. Reductions in night fatalities attributed to relighting, average 76 per cent, the Bureau disclosed.

HIGH FATALITY RATE OF NIGHT TRAFFIC ACCIDENTS SHOWS IMPORTANCE OF VISIBILITY

Night Accidents Are 38% Fewer But 40% More Fatal Than Daylight Accidents

	ALL ACCIDENTS				FATAL ACCIDENTS			
STATE	NIGHT	DAY	NIGHT % OF TOTAL	NIGHT LESS THAN DAY	NIGHT	DAY	NIGHT % OF TOTAL	NIGHT MORE THAN DAY
ARIZONA	2,508	3,356	43%	25%	155	104	60%	33%
CONNECTICUT	11,969	21,115	36%	43%	164	70	70%	57%
FLORIDA	5,326	6,978	43%	24%	350	266	57%	31%
KANSAS	4,303	6,729	39%	36%	222	187	54%	19%
MAINE	1,569	2,124	42%	26%	98	66	60%	48%
MARYLAND	4,396	6,146	42%	38%	48	27	64%	78%
MICHIGAN	14,907	17,086	46%	13%	775	549	58%	41%
MINNESOTA	18,059	24,924	42%	27%	290	192	60%	51%
NEW JERSEY	22,637	37,385	38%	39%	317	228	58%	28%
NORTH DAKOTA	1,079	1,491	42%	28%	63	55	53%	15%
OREGON	21,450	45,848	32%	53%	201	158	56%	27%
RHODE ISLAND	1,000	1,622	38%	38%	29	22	57%	32%
UTAH	4,454	5,507	45%	9%	90	79	53%	11%
WASHINGTON	22,587	37,104	38%	39%	93	62	60%	50%
TOTALS	136,244	217,415	38%	37%	2,895	2,065	58%	40%

Tabulation by The Street and Traffic Safety Lighting Bureau, April, 1949
By Edmund C. Powers, Director, Public Information, 1410 Terminal Tower, Cleveland 13, Ohio

Traffic Defined

Traffic is a short word, but did you ever try to define it?

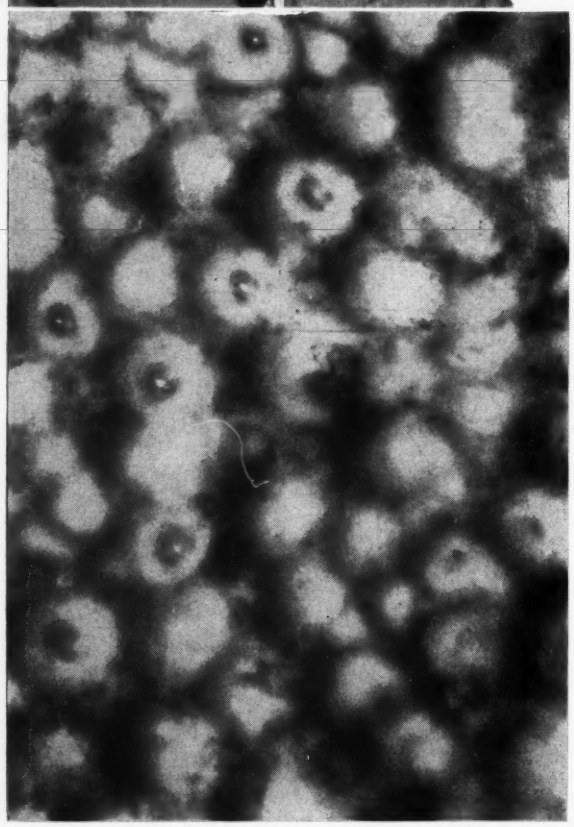
Carl Rutland, chairman of the citizens traffic commission of Dallas, and dean of Southwestern safety councilmen, offers this definition:

"This word 'traffic' carries a whale of a definition and permeates every community activity. It includes congestion, parking, accidents, loading, physical suffering, claims, delays, irritation, taxable values, enforcement, deliveries, appointments, merchandising, realty values, employees' work hours, mass transportation, pedestrians, school children, signs, signals and regulations, insurance premiums, shoppers, drunks, streets and more.

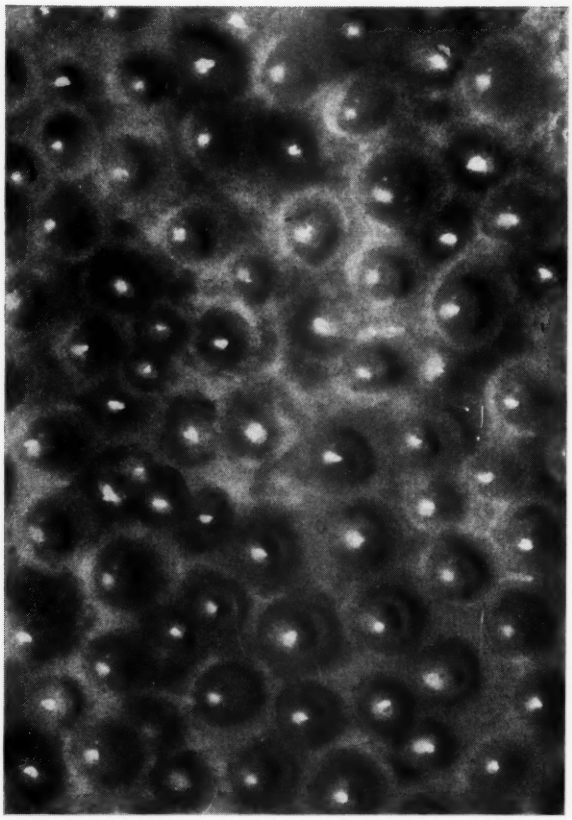
"It touches every human, every home and every business and pocketbook. It deals with and perhaps overlaps more municipal departments than any other one activity. It is the one common, continuous topic of conversation, much of it critical for lack of action. It is an unbridled, mushroomed mixture of humanics and mechanics."

Traffic Digest, Vol. 3, No. 6, June, 1949. Highway Research Abstracts, July, 1949.

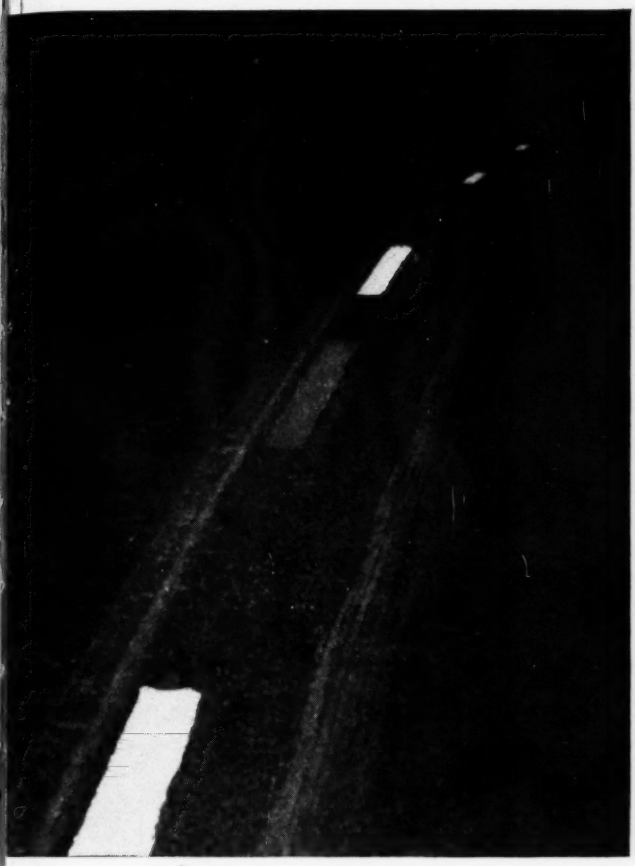
"We cut pavement marking costs with 'CENTERLITE' BRAND Reflective Compound"



1. "ONE GALLON OF "CENTERLITE" COMPOUND wears as well as three to five gallons of ordinary pavement marking materials. Microscopic glass spheres and a tougher binder that are pre-mixed under factory control, go on the road in an even coating through our standard striping machines —fast, smooth, and with an even distribution of spheres."



2. BUFFING BY TRAFFIC polishes "Centerlite" Reflective Compound to a lasting brilliance that remains effective up to five times as long as ordinary materials . . . and actually gets more brilliant with wear!



3. APPLICATION COSTS ARE CUT as much as 80% because this new compound goes on the road so easily but lasts so much longer! This photo, taken of an actual comparison test, shows how "Centerlite" Reflective Compound maintains it brilliance while conventional materials lose their effectiveness.

4. GLOWING RIBBONS OF GUIDING LIGHT will protect motorists on your highways on darkest nights, in murkiest weather. And the longer effective life of "Centerlite" Reflective Compound means you can depend on it to stay on the job not only during the summer but through the winter when road marking is impossible.

For Full Details of How This New Compound Can Cut Your Pavement Marking Costs,
Write Today to Dept. TE 119

MADE IN U. S. A. BY

MINNESOTA MINING & MFG. CO.

SAINT PAUL, 6, MINNESOTA

also makers of "SCOTCH" Brand Pressure-Sensitive tapes, "UNDERSEAL" Rubberized Coating, "SCOTCHLITE" Reflective Sheeting, "SAFETY-WALK" Non-Slip Surfacing, "3M" Abrasives, "3M" Adhesives.

CENTERLITE
BRAND
REFLECTIVE
COMPOUND

General Export: DUREX ABRASIVES CORP., *New Rochelle, N. Y.*
In Canada: CANADIAN DUREX ABRASIVES LTD., *Brantford, Ontario*

Open Discussion

Theoretical Assignment of Diverted Traffic

A recent survey of methods used in applying Origin and Destination traffic data in the location and justification of proposed routes discloses a variety of practices. Five states report that planning and engineering judgment is used; twenty-nine states base their decisions on time and/or distance computations; no record was available from the remaining fourteen states. None of the states are completely satisfied with their method because a number of important factors are yet unsolved. No one is sure of the proper weight for valuation of time and distance, much less for intangible factors, hazards, discomforts, unattractiveness, etc. There have been few before and after studies made dealing with diverted and generated traffic. As yet these are "anybody's guess" although they are the very essence of the problem.

Theory of Diverted Traffic

Perhaps the question of diversion may be solved, within reasonable accuracy, by mathematical theory. In general, up to a point where the travel by proposed expressway is no greater in *distance* than by a competitive route in the existing street pattern, the expressway should be preferred. Beyond this point, where travel by the expressway becomes longer than by the existing city streets, the number of cars using the expressway will decrease in volume to zero—the point where travel *time* is greater by the expressway than by the existing route.

In other words, 100% diversion may logically be expected where length of travel *distance* is equal or less on the expressway and zero diversion where travel *time* is equal or greater on the expressway. This is based wholly on economy of use and does not consider safety, comfort or the aesthetic factor.

Between the limits of 100% diversion and 0% diversion there is need to determine the intermediate percentages. If weights are assigned to operating and time costs, a 50-50 break in the use of the facility may be expected where cost by each route is equal. (Values of time and distance may be either pre-war or present since the same approximate comparative ratio will be maintained.)

Weights for Time and Distance

In the selection of weights for time and distance, some consideration must be given the *economy* of the flow area. If economy of the area is extreme to the point of poverty then the distance factor should be given more weight than in areas where vehicle operating costs do not "pinch the pocketbook". Also, the selection of weights should take in the period of the day because the greatest value of time occurs during the peak hour.

The "Survivor" Curve

Thus, with known points of 0% diversion, 50% diversion and 100% diversion, three points on the diversion curve are established. The diversion curve starts with 0% diversion where there is a loss in time, economy and distance. Increased diversion results first from benefits in time, then later a point of balanced economy is reached, and finally 100% diversion occurs with benefits in distance. It is logical to assume that the locus of the diversion curve increases in the rate of buildup to the point of equal economy, then the rate decreases until the final point is reached. Resorting then to the intuitional method to determine curve type, a method not uncommon in mathematics, the changes in relationship of diversion and benefits are expressed by a curve called the "survivor" curve. The solid line curve on the accompanying figure shows a typical survivor curve.

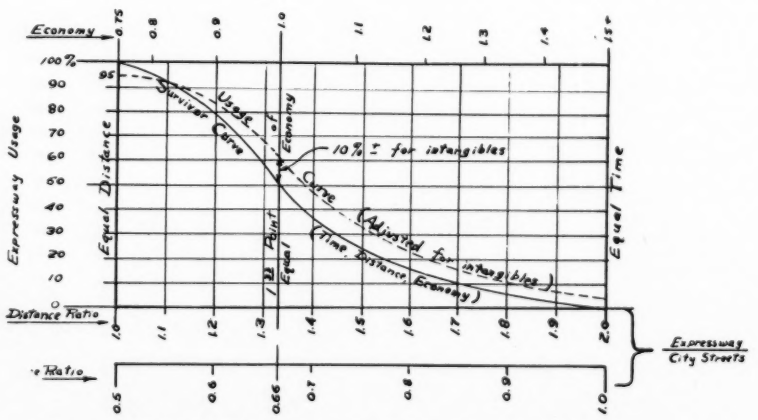
Intangible Factors

So far, only benefits through savings in time and distance have been considered. Other benefits — comfort, safety, beauty, desire for unremittent motion, as well as force of habit, investigative desire, etc., will affect diversion. No one knows the value of these intangibles. But, it would probably not be remiss to adopt an allowance up to 10% for these intangibles —that is, up to 10% *more* diversion onto the expressway than otherwise expected. The "usage" curve shown on the Figure is adjusted for this allowance.

Comparative Speeds

To relate distance and time for the curve, comparative speeds for both facilities are assumed. This does not, however, relieve the necessity for measuring existing actual speeds and desired speeds of free-flowing traffic. The expressway should be designed for reasonable desired speeds. It has been assumed that the average speed of travel over the expressway will be 40 mph. However, the design speed should be much higher than average, and perhaps equal to the 95 percentile of free-flowing traffic—this must justify the expressway.

With respect to speeds on the existing streets, it may be assumed that when traffic is diverted to the express-



DIVERSION FROM CITY STREETS TO EXPRESSWAY

ASSUMPTIONS: Expressway Routing 40 M.P.H., Streets 20 M.P.H. Time cost ⅓ of operating cost of vehicle.

way, and their capacity again approaches adequacy, then speeds on the existing streets will increase to approach that set by law or by control devices.

Since expressways are built to relieve pressures at the present time, we need not be concerned too much about relative volume adjustment twenty years from now, except to provide a sufficiency in expressway design capacity. We are immediately concerned with relief during the critical hours of today's traffic.

A trip from origin to destination will seldom be made entirely on the expressway. The trip via expressway will likely be made up of two portions of travel: one on existing city streets (to and from the expressway) and one on the expressway. The average speed of travel by each route (via existing streets entirely and via expressway and city streets) must be ascertained, between the *points of choice* of routes, going and returning. Just the difference in speed, or the ratio of speed, will not be sufficient. Determination of possible *extra* length of travel to use expressway, from such data, is impossible.

Application of Curve

Instead of "working a formula" for trips between each origin and destination, perhaps the handiest formulation of data for solving each case would be a series of tables, say ten series, involving speed ratios between 1.5 and 3, with combinations in 5-mile increment speeds in each table.

For example, under speed ratio of 2, the combination below would be set up.

The percentage values would be picked from the survivor curve which would be constructed by drawing a smooth survivor curve between the three determined points (equal distance, equal economy, equal time) and then offsetting by a dotted line similar to that shown in the accompanying Figure.

PROBABLE PERCENTAGE OF TRAFFIC DIVERTED

Speed Ratio Series	Speed Combi.	Percent Usage Based on Time Ratios										
		0.5	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.0
	(:45—22½											
	(:40—20	94	93	83	66	48	33	20	13	8	6	5
2:1	(:35—17½											
	(:30—15											
	(:25—12½											
	(:20—10											

Number of columns depends upon speed ratio

M. Earl Campbell
Engineer of Traffic & Operations
Highway Research Board

Mr. Campbell will welcome your discussion of this thesis

Zoning and Roadside Control in New Jersey

A recent decision of the New Jersey State Supreme Court has given encouragement to proponents of roadside control in that State. According to Mr. Spencer Miller, Jr., State Highway Commissioner, [1]the court's decision in the case of Duffcon Products, Inc. vs. Borough of Creskill (64 Atl. 2d, 347) upholding the authority of the borough to exclude heavy industry from its borders, was handed down on March 7, 1949, by the present State Supreme Court under the new constitution adopted in 1947. A previous State Supreme Court had set aside the zoning ordinance in 1946 under the old constitution.

In upholding the ordinance the court held that a zoning ordinance must seek to conserve the most appropriate use of the land, depending both on the conditions in the municipality and its present and prospective needs. The Borough of Creskill is essentially a residential community and furthermore there is in the vicinity land peculiarly adapted for industrial purposes. The court found no violation of either the State or Federal constitutions nor did it consider that the exclusion of heavy industry constituted arbitrary or unreasonable limitations on the use of private property.

According to the New Jersey highway commissioner, the cause of roadside control is greatly reinforced by this decision. Previous attempts on the part of various municipalities to plan the development of their roadsides through zoning ordinances had often been thwarted by court decisions in which said zoning ordinances were held in violation of the State constitution. A reasonable inference from this decision, says Mr. Miller, is that if a municipality desires to preserve the scenic area of its roadsides against commercialism, it will now be able to do so. Community growth can be developed according to a comprehensive plan.

Although the new State constitution does not provide for either State or county zoning as such, Mr. Miller feels that the principle of zoning as an exercise of the police power in the public interest has been greatly strengthened by the decision. And since roadside protection is in the public interest, local units can now provide the protection they need by means of zoning.

[1]—"Zoning and Roadside Control," by Spencer Miller, Jr., THE HIGHWAY, published by the New Jersey State Highway Department, March-April 1949, p. 1.

(Highway Research Correlation Service—Circular No. 73, 1949)

Affiliation of the Construction Industries Association with the International Road Federation has been announced by B. C. Budd, Chairman of IRF's board of directors. The C.I.A., which comprises more than 300 American manufacturers of road-building equipment, is also affiliated with the American Road Builders Association as a member of their manufacturers division.

National Military Establishment Reports Vehicle Designs Conform to Military Needs

Military highway transportation requirements can be met almost entirely by present design standards for both highways and heavy motor vehicles.

Topping the list of military highway needs is a relatively small "connected system of highways interstate in character."

This is shown in a special report issued by the National Military Establishment reflecting current coordinated views of the Army, Navy, Air Force and Munitions Board. The report was submitted by the Military Establishment to the Commissioner of Public Roads in accordance with terms of the Federal Aid Highway Act of 1943. The Act directed the Commissioner to further report on "Highways for National Defense," in cooperation with the Secretary of Defense.

A review of the report was made at the recent Louisiana Highway Conference by D. K. Chacey, Highway Engineer, Transportation Corps, Department of Army.

As reported by Mr. Chacey:

"The National Military Establishment considers a relatively small 'connecting system of highways interstate in character', constructed to the highest practical uniform design standards, essential to the national defense and because of time required and cost, such a system must be planned for and constructed during peace-time.

"The transportation utilization experience of the military forces during World War II was the basis for recommendations as to routes that should become a part of the National System of Interstate Highways, and it is believed that this system will, in large part, provide the principal system of connecting highways to serve the national defense.

"That urban arterial highways should be given equal consideration, in their development to the highest practical standards, with the National System of Interstate Highways and other strategic highways.

"That circumferential routes in large cities are potentially of greatest value to the national defense from the standpoint of movement of cargo and personnel by highway transportation when located in the outer development adjacent to smaller buildings and serving as many as possible of the transportation terminals and industrial areas.

"That all highways of the connected system of highways interstate in character, which includes the National System of Interstate Highways and other officially designated highways of strategic importance, incorporate in the functional design the principle of controlled or limited access, unless such construction is found to be not feasible."

December 4-8 — PALM BEACH, FLORIDA

International City Managers Association. 35th Annual Conference. Executive Director, 1313 East 60th Street, Chicago, Illinois.

December 13-15 — WASHINGTON, D. C.

Highway Research Board. Annual Meeting. Director, 2101 Constitution Avenue, Washington 25, D. C.

January 17-19—NEW YORK CITY

American Society of Civil Engineers. Annual Meeting. William N. Carey, Executive Secretary, ASCE, 33 West 39th Street, New York 18, N. Y.

U. S. Chamber Appoints Transportation Dept. Chairman

Evans A. Nash, president of Yellow Transit Company, Oklahoma City, has been reappointed chairman of a newly enlarged Transportation and Communication Department Committee of the Chamber of Commerce of the United States. This announcement has been made by Herman W. Steinkraus, president of the National Chamber.

Mr. Nash is one of two transportation directors of the Chamber, along with C. McD. Davis, president of the Atlantic Coast Line Railroad Company.

The committee, charged with the responsibility of resolving important problems facing the transportation and communication industries, will focus attention on major issues vital to the maintenance of a strong, efficient, privately owned and operated transportation system. Representatives of the general public, shippers and all forms of carriers make up the membership of the committee.

The first meeting of the new committee was held on September 22 in Washington.

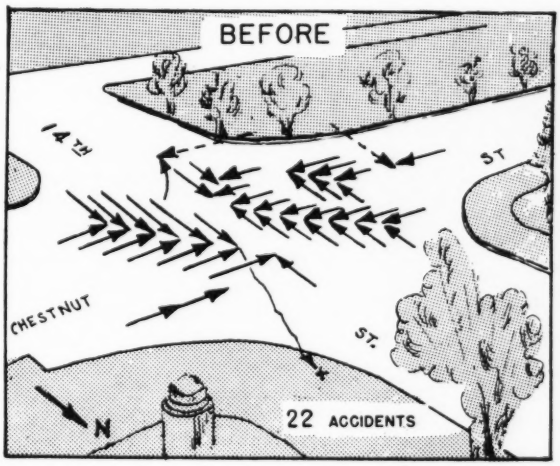
California Offers New Graduate Course

Don Berry of the Institute of Transportation and Traffic Engineering reports that several new graduate courses in Transportation Engineering have been approved officially for the coming year at the University of California in Berkeley. He states the programs can be planned to suit the background and aims of students especially interested in such phases of transportation as highway planning and economics, highway administration and finance, highway design, highway materials and subgrades, airport planning and design, traffic engineering, or urban transportation. For full details write to DR. DON.

GETTING RESULTS
Through Traffic Engineering

TRAFFIC SITUATION No. 4 — CHANNELIZING FOR SAFETY

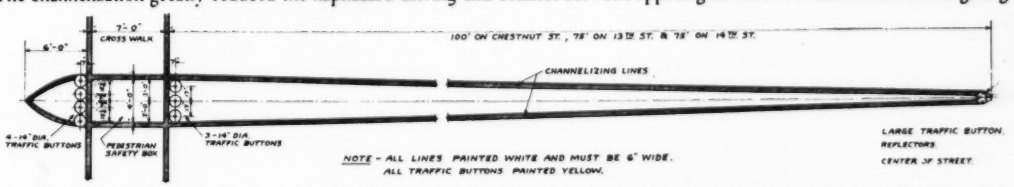
PROBLEM — The intersection of Fourteenth and Chestnut Streets, St. Louis, Missouri, had the second highest accident frequency of all intersections within the City of St. Louis during the year 1937, and was continuing in approximately the same proportion for the first six months of 1938. The intersection consists of a seventy foot and a seventy-six foot roadway offset in two directions approximately ten feet. The large free area created a plaza effect



ACCIDENT FACTS — Twenty-two accidents occurred at this intersection between January 1, 1937 and July 28, 1938. Eight of the twenty-two accidents were injury accidents in which eleven persons were injured. Two of the injury accidents also involved pedestrians. The collision diagram shows the location and the types of these accidents.

FIELD STUDIES — A study of the volume showed that more than 22,000 vehicles moved through this intersection during a twenty-four hour period. The greater part of this traffic moved in an east and west direction on Chestnut Street with a large volume of all traffic making left turns. The approach of these motorists contemplating turning movements was haphazard, resulting in confusion to other motorists already in or approaching the intersection.

SOLUTION — The large free area of this intersection was eliminated by the construction of four combination channelizing and pedestrian safety zones. Each zone was indicated by traffic buttons and white paint lines. See sketch below for design details. The channelization greatly reduced the haphazard driving and conflict between opposing streams of traffic in addition to giving the


7'-0" CROSS WALK
6'-0"
100' ON CHESTNUT ST., 75' ON 13TH ST. & 78' ON 14TH ST.
CHANNELIZING LINES
4-14" DIA. TRAFFIC BUTTONS
PEDESTRIAN SAFETY BOX
3-14" DIA. TRAFFIC BUTTONS
NOTE - ALL LINES PAINTED WHITE AND MUST BE 6" WIDE. ALL TRAFFIC BUTTONS PAINTED YELLOW.
LARGE TRAFFIC BUTTON REFLECTORS CENTER OF STREET

pedestrian, using this intersection, a mid-point to stand while changing his direction of observation. The cost of the improvement was approximately $159.00, including all labor and material used. The maintenance of the white channelizing lines is of small consequence. Inspection indicates that it will not be necessary to repaint these lines more than once each year. This inspection also indicated that it will require approximately three paintings per year to properly define the pedestrian crosswalks.

CHECK BACK — No accidents were reported in the nine months following the improvement. Estimating the cost of the twenty-two accidents for the previous nineteen months at $7500 it can readily be seen that the net saving during the first nine months may be estimated at $3400.

Example Contributed By

Joseph J. Feuchter, Traffic Engineer
Department of Streets and Sewers
St. Louis, Missouri.
Member, Institute of Traffic Engineers

Ed. Note: Herewith the second in a continuing series of "Getting Results Through Traffic Engineering" examples through the courtesy of the Accident Prevention Department, Association of Casualty & Surety Companies, 60 John Street, New York City. For the information of readers we prefer to retain the title of the contributor at the time the example was submitted. Mr. Feuchter has since retired from the city to do private consulting work.

ITE NEWS AND PERSONALS

400 ATTEND ANNUAL MEETING

(Continued from October issue)

Traffic Actuated Cycle

Adaptation of traffic actuated equipment to fixed-time signals, so that length of cycle can be varied in accord with traffic demand, was outlined by Mr. John L. Baker, Development Engineer, Automatic Signal Division, to lead off the Tuesday morning session. He also detailed the application of a pair of these cycle selectors so that the timing program on a triple-offset system can be changed through actuation instead of the usual time switch.

Reversing Flow in 3-Lane Roads

Mr. Melville M. Todd, Associate Traffic Engineer, Virginia Department of Highways, followed with a discussion of the use being made of such devices to control reversal of flow in the center lane of a three-lane roadway near Arlington, Virginia. Facing a given direction of flow in this system is a single red lens over the extreme left lane, a red, amber, green and red (top to bottom) over center lane, and conventional three-light signal over right lane. Predominant flow on this highway, carrying some 23,000 vehicles daily, is 80% in-bound in morning peak, 72% out-bound in evening peak.

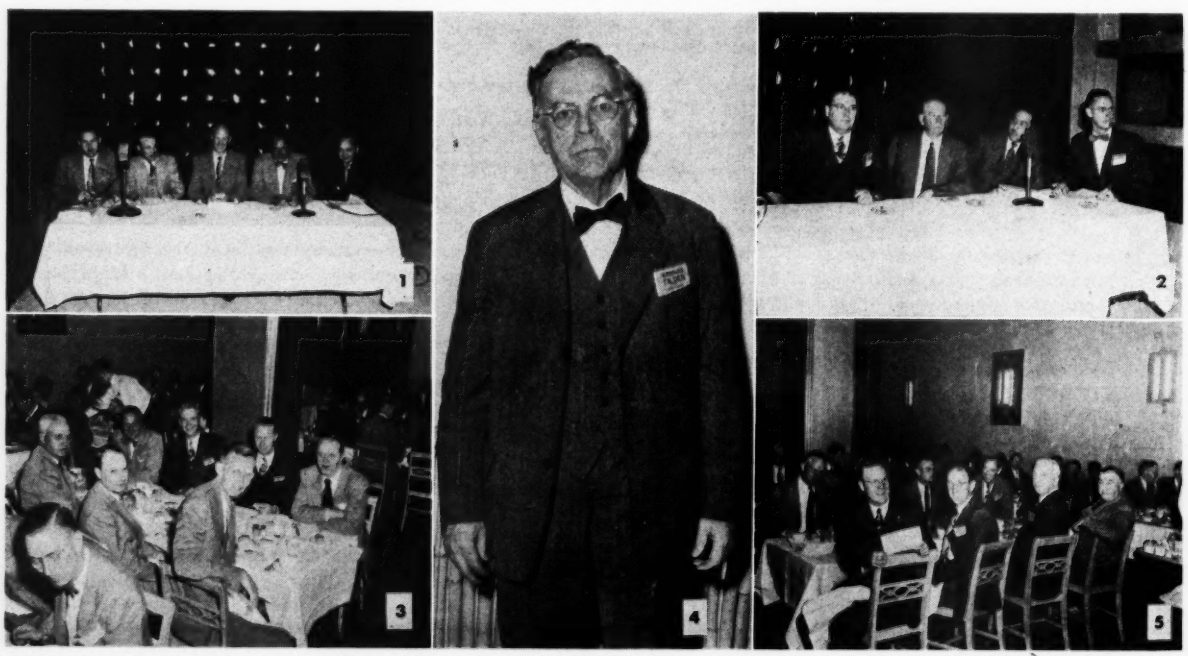
[1] The "high-powered" panel on Traffic Engineering Organization set to take on all comers in a two-hour session. Left to right: Joe Havenner, Jim White, Earl Reeder, presiding, Dwight Myers, and "Teke" Wiley. [2] One of the "hottest" sessions of the entire meeting was the panel on the downtown congestion problem. The experts selected to discuss important parking and decentralization matters are, left to right: Don McNeil, Huston Rawls, David Levin and Charles LeCraw. [3] A breakfast group in an informal pose, around the table, clockwise: newly elected president, Wilbur Smith, Tom Willier, O. K. Normann, Dwight Myers, Jim Darrell, Maurice Hewitt and Harry Porter. [4] Honorary Member Charles Tilden strikes an informal pose for the photographer. [5] Group at the table in the foreground enjoying the Biscuit Banter Breakfast, left to right, clockwise: Ted Holmes, unidentified, Bob Grunow, Carl Fritts, Fred Fisch, Ed Koester, John Ecker and Burton Marsh.

Stop Sign Warrants

Mr. Morton S. Raff, Research Assistant, Yale Bureau of Highway Traffic, confounded his audience initially by placing a Greenshields mathematical formula on the blackboard, in his discussion of time-space relationships at stop intersections. However, he soon reduced this to terms of "critical lag" and into easily understandable measures of traffic flow and delay, resulting in a new method for determining warrants for stop signs at intersections.

Drive-In Theatres

Mr. J. E. Johnston, Traffic Engineer, Nebraska Department of Roads and Irrigation, presented a well-prepared cause-and-result outline of the outdoor



theatre problem in relation to heavily travelled roadways. As chairman of the AASHO Committee on Roadside Control, he had authentic data at his command concerning this problem.

He related that 58% of today's outdoor theatres interfere with safety or ease of flow on abutting highways. Many are poorly designed, from a state highway man's viewpoint, but operators frequently are more than willing to cooperate when flows are revealed.

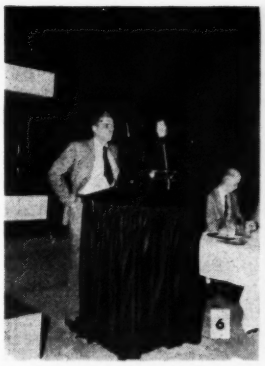
The Technical session Tuesday afternoon, September 27, brought many facets of the parking problem into view. The papers and discussions covered a wide range—from the effect of parking meters on curb turnover to the broad city planning aspects of parking demand.

Meters an Aid to Enforcement

John Mitton, Traffic Engineer, Department of Vehicles and Traffic, Washington, D. C., told of policies of meter installations and surveys "before" and "after" metering. In discussing a study of a location near the fringe of a large business area in Washington, Mitton reported a gain in curb space use, increased turnover, greater "open" space, less overtime violation, and lower average durations following the installation of parking meters. "Turnover increased from 3.1 cars per day per space to 7.9 cars per day per space after the meters," Mitton said.

Parking Authorities and Private Capital Ventures

In the panel discussion following Mr. Mitton's address engineers heard the latest developments in the question of private vs. public operation of



[6] Norman Hebden, Research Associate, Yale Bureau of Highway Traffic, expounds the theory of state-city relations in traffic affairs. [7] Executive Secretary Bob Holmes in a serious moment while delivering the Annual Report at the Business Meeting. President Bob Mitchell (the profile) presiding, has a few moments of relaxation. [8] Harry Porter, Jr., Traffic Engineer, National Safety Council, prepares to deliver his address on the ITE award for excellence in traffic engineering. [9] John Mitton presents his views on the subject of parking meters before attentive audience.

[10] President Wilbur Smith attempts seriousness when announcing the convention site for 1950 during the Annual Dinner. Mrs. Smith joins the hilarious crowd who didn't seem concerned with the selected location. [11] Mrs. Joe Feuchter and Henry Osborne enjoying chat during reception on Tuesday evening. [12] An informal group which the photographer took by surprise at the Annual Dinner, left to right: Don Berry, Miss Opal Hadley, Director of Publicity for the Wardman-Park Hotel, and Joe Havenner. [13] Mrs. Clyde Condrey strikes an informal pose for the photographer at the buffet table during the reception preceding the Annual Dinner. All of the ladies were presented with gardenia corsages as a gift from the Washington Section, ITE.

parking facilities. Don McNeil, Traffic Engineer, Bureau of Traffic Planning, City of Pittsburgh, talked on recent progress of the Pittsburgh Parking Authority. "A basic conclusion of the fact-finding studies leading up to the formation of the authority" McNeil said, "was the conclusion that private capital could not solve the problem. There is no other solution to our problem except a public parking authority."

Charles LeCraw, Traffic Engineer for the Eno Foundation for Highway Traffic Control, Saugatuck, Connecticut, followed with a report on what private enterprise was doing in easing the parking problem and cited many facts from a recent case study of city parking. It was brought out that the majority of available space in most cities was actually being provided by private business interests. LeCraw placed emphasis on the number of *new* spaces provided in recent years by private capital and cited facts showing that, contrary to popular impression, private parking operations were not "fly by night" but exhibited a high degree of permanency.

Moving Traffic Generators to the Country

In a talk marked by frequent praise of the traffic engineering profession, Mr. Huston Rawls of National Suburban Centers, Inc., Boston, Massachusetts, traced the work of his firm in meeting the problem of locating new business in the present state of city growth. "The switch in Retail Distribution is not a theory any longer—it's here," Mr. Rawls said.

"Business must decide to put new stores in one of the following places: near parkways, in ribbon clusters along main roads, or in suburban central retail districts," Rawls said.

"In the planning of the retail suburban centers consideration must be given to sufficient space to insulate the business development from parasitical additions which reduce land area and the space for parking." Rawls cited a ratio of 3 sq. ft. of parking for every 1 sq. ft. of retail area. Mr. Rawls believed that traffic engineers were one of the few groups that truly appreciated the far-reaching effects of "putting the little woman on wheels."

Zoning for Parking

Mr. David R. Levin, Chief, Land Studies Section, Bureau of Public Roads, discussed latest studies of the application of zoning requirements for parking on new construction, giving advantages to this "positive attack". "It is desirable that no attempt be made toward retroactive legislation," Mr. Levin said, and advised concentration of effort to require all future building be properly zoned for its particular parking requirements. Advantages to zoning were outlined showing gains to owners, tenants, and users. "The cost of zoning falls directly on those benefited," Mr. Levin said.

Complex Traffic Problems in the Washington Area

Session No. 5 was a technical discussion of the traffic facilities to be inspected during the afternoon field trip. Mr. Harry Porter, Jr., Traffic Engineer, National Safety Council, presided and introduced the first speaker, Mr. Lawrence S. Tuttle, Assistant to the Commissioner, Bureau of Public Roads. Mr. Tuttle described the traffic problems of the Washington metropolitan area and presented to the audience maps showing the route of the field trip. He pointed out that the field inspection would include the duPont Circle, Whitehurst Freeway, Shirley Highway, Pentagon Network, Potomac River Crossings, and various other channelization and unusual traffic signal installations within the City of Washington.

Following Mr. Tuttle, the planning and design of the DuPont Circle, grade separation and Whitehurst Freeway were discussed by Mr. S. R. Harrison, Deputy Director of Highways, District of Columbia.

Mr. D. W. Loutzenheiser, Chief of Design Development Section, Bureau of Public Roads, discussed the design features and operational characteristics of the Pentagon system and Shirley Highway. Mr. Loutzenheiser pointed out that the Pentagon system is unique with regard to the speed of its construction. "The first plans for the Pentagon building were made in October 1941, and by May 1942 part of the building was occupied, with the road network being completed by July 1943," said Mr. Loutzenheiser. "The low fatal accident record of the Pentagon system is indicative of the inherent safety qualities of modern design," he added.

Mr. E. H. Holmes, Chief, Highway Transport Research Branch, Bureau of Public Roads, described the planning and construction problems presented by the new Potomac River Crossings. Slides showing the origins and destinations of traffic and anticipated growth of traffic, along with expected re-routing, demonstrated an interesting example of analytical planning of main traffic facilities.

The final portion of this session consisted of a number of "before and after" examples of channelization and traffic signal projects within the Washington area. Mr. Wallace L. Braun, Deputy Director of Vehicles and Traffic, District of Columbia, described the "before and after" conditions and the results of the improvements from large scale drawings of the locations which were to be inspected on the field trip.

Annual Meeting Resolutions

The following Resolutions were prepared by a special committee and approved by the Board of Direction of the Institute of Traffic Engineers, and the membership, at the 20th Annual Meeting:

1. RESOLVED that those members in attendance at the 20th Annual Meeting, and in behalf of those who were unable to be with us, extend to our outgoing President, Bob Mitchell, our sincere appreciation for his wise and vigorous leadership of the Institute of Traffic Engineers for the past two years during which period the Institute has become an increasingly recognized influence in traffic and transportation matters of the Nation. We shall continue to look to him for his wise counsel in the future affairs of the Institute.

———o———

2. WHEREAS, the 20th Annual Meeting of the Institute of Traffic Engineers has been an outstanding success with respect not only to programs, attendance and interest, but also as to arrangements for the comfort, convenience and entertainment of delegates and guests, and

WHEREAS, the planning which has made possible the success of this

meeting is the direct result of the thought and painstaking efforts of the Local Arrangements Committee, now therefore be it

RESOLVED that the ITE extends its grateful thanks and appreciation to the following:

Gordon Gravelle, original chairman

LeVerne Johnson, original vice-chairman and subsequent chairman

Mrs. John B. Ecker, chairman, Ladies Program Committee, and her associates

The Greater National Capital Committee

as well as the members of the Local Arrangements Committee listed on the official program.

———o———

3. RESOLVED that those in attendance at the 20th Annual Meeting of the Institute of Traffic Engineers extend our warmest appreciation to those members of the Washington Section of the Institute who gave so generously of their time and efforts to make this meeting a pleasant and lasting memory and to Armand Keeley, and to the 26 organizations listed in the Headquarters Room, that made valuable contributions to the success of this memorable annual event of the Institute in Washington, D. C., and

BE it further resolved that the Board of Direction recognize the support of these 26 organizations by an appropriate letter of appreciation to each of these organizations.

———o———

4. RESOLVED that the Institute of Traffic Engineers by every means at its disposal encourage public officials to conduct comprehensive metropolitan wide studies including traffic volume, O&D, parking, transit, ordinance and other traffic surveys as a basis for complete evaluation of traffic problems in metropolitan areas that would lead to sound plans, embracing better use of existing facilities, the construction of arterial routes, creation of adequate off-street parking, development of transit facilities, uniform traffic laws and adequate traffic management.

———o———

5. RESOLVED that the Institute of Traffic Engineers urge that most effective use be made of traffic engineering principles and techniques in all state-wide highway need studies to the end that fullest possible use is made of existing highway facilities and that new facilities be planned and designed upon the basis of traffic operations requirements.

Resolutions Committee

Nathan Cherniack, Chairman
J. W. Arch Bollong
Guy Kelcey
Burton Marsh
Earl J. Reeder

MEMBERSHIP ELECTIONS

Elected October 25-26, 1949

MEMBERS

CAMPEAU, CHARLES E.
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MASLOG, RODOLFO
Traffic & Planning Engr.
Bur. of Public Wks., Philippines

SIMONS, GEORGE W., JR.
Planning Consultant
SEND MAIL: 1452 Avondale Ave.
Jacksonville 5, Florida

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Executive Vice-President
Asociacion Mexicana Automovilistica
Berlin No. 6, Mexico D. F.

PETERSON, W. H.
Manager, Municipal Division
Eagle Signal Corporation
Moline, Illinois

ASSOCIATES

COCHRAN, MAURICE W.
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SEND MAIL: Fulton Beach
Rockport, Texas

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City of Detroit
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OSOFSKY, SAM
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Highway Planning Survey
State Div. of Highways
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STOUT, HAROLD W.
Field Traffic Engineer and
Acting Asst. Traffic Engineer
State of Nebraska
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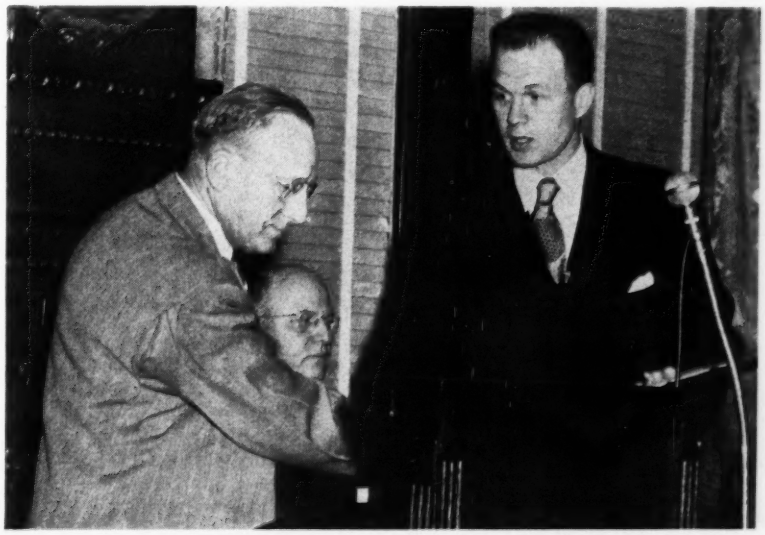
Lincoln, Nebraska



Harry E. Neal, left, Vice-President, Institute of Traffic Engineers, presents the Traffic Engineering Award Plaque to Law Director Lee C. Hawley, right, who accepted in behalf of the city of Cleveland on May 15, 1949. Ned Dearborn, center background, President of the National Safety Council, was present for the ceremony. Cleveland won first place in Group I, cities (500,000 population and over).

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Association of Casualty & Surety Cos.
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Highway Research Board
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Liberty Mutual Insurance Company
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Gloucester, Massachusetts

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Junior Civil Engineer
Traffic Engineering Bureau
City of Detroit
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Traffic Analyst
Pennsylvania Dept. of Highways
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Harrisburg, Pennsylvania

THILLAINAYAGAM, R.
4, Annamalai Puran
Tennur P. O., Trichnopoly
South India, India

TRANSFERS

ASSOCIATE TO MEMBER

DIBBLE, WORTHAM W.
DOBELEK, JOHN J.
SHOAF, ROSS T.

JUNIOR TO ASSOCIATE

BELKIN, MAJOR M.
BELL, FREDERICK L.
FRANKLIN, JEROME D.
SCHMIDT, ROBERT E.
SIEGEL, STANLEY T.

The photograph above was taken at the presentation dinner of the Third Massachusetts Governor's Highway Safety Conference on the evening of June 9, 1949, before an audience of 1200 men and women. His excellency, Paul A. Dever, Governor of the Commonwealth of Massachusetts, center, has just presented the ITE Traffic Engineering Award to Mr. Joseph W. Kales, left, of Belmont, winner in Group V. On the right is Chief William G. Heyd, of Belmont, who received the National Traffic Safety Contest Award for Group V, cities (25,000 to 50,000 population). Mr. Edgar F. Copell, Traffic Engineer, Massachusetts Department of Public Works represented the Institute of Traffic Engineers.

Report of Executive Secretary

This Annual Report will replace the regular Secretary's Column for the next two issues.

General

The fiscal year October 1, 1948 to September 30, 1949 brought the Institute to another important milestone in its successful career. Many important decisions were made which will have a marked bearing on the future growth and expansion of the organization. The report that follows reflects the continued whole-hearted cooperation of the Board of Direction and the membership in support of the efforts of your national headquarters staff. During this period, as reported by your Secretary-Treasurer, the *Institute* received contributions from certain national and local organizations for the last time; the demand for qualified traffic engineers grew out of proportion to the supply; membership continued to increase at a uniform rate; "Traffic Engineering" magazine outgrew *volunteer* editorship and the entire responsibility for publishing was given to headquarter's staff; the revised edition of Traffic Engineering Handbook was completed preliminary to final editing and publication; state-wide "in-service" traffic engineering training was continued; public relations activity with national and international organizations was greatly expanded; the *Institute*, for the first time, sponsored Traffic Engineer-

ing Achievement Awards to cities and states on the basis of a nation-wide contest; and ITE technical committees were completely reorganized for more efficient operation.

In a report of this nature, no attempt will be made to cover all of the many details incident to the administration and operation of *Institute* affairs. Major administrative and policy matter relating to management of the affairs of the *Institute* were reviewed and necessary action taken at five meetings of the Board of Direction held as follows:

October 12, 1948—Philadelphia, Pa.
December 9, 1948—Washington, D. C.
March 6, 1949—Tampa, Florida.
June 1, 1949—Washington, D. C.
September 25, 1949—Washington, D. C.

You have already heard the report of the Secretary-Treasurer which reflects a sound financial condition. Much of the *Institute's* activities will be reported by the committee chairmen. This report, therefore, will concern itself with a general review of Board activity, the services and operation of National headquarters, and matters that will not be covered in other reports.

Headquarters Operation

National headquarters continues to enjoy the contribution of Yale University in providing office facilities, equipment, and special operational services. In addition to the Executive Secretary, the headquarters staff is composed of Miss Ann Lincoln, Assistant Secretary and Managing Editor of "Traffic Engineering" magazine, Miss Bridget Pellegrino, Assistant to the Secretary, and Miss Anne Leftwich, Secretarial Assistant. Were it not for the rapid and efficient work of these able assistants, the activities of headquarters office would be seriously curtailed.

Among the more important developments during the year to increase the efficiency of service and facilitate operations were: (1) the further expansion of a selected mailing list to cover 6,000 State, County, and Municipal officials and others interested in the field of traffic engineering; (2) the establishment of an official *Institute* library to more effectively supply desired technical information upon request; (3) the establishment of a regular procedure for handling requests for qualified personnel to fill position vacancies; (4) the maintenance of an accurate listing of consultant traffic engineers to be forwarded to municipalities requesting this service; (5) the establishment of permanent policies and procedures for more effective promotion and publication of "Traffic Engineering" magazine and other *Institute* publications; and (6) more improved procedures for the mechanical processing of transfer and new member applications to minimize the over-all time from original submittal to final action by the Board of Direction.

Personnel Services

During the past year, National headquarters was either directly or indirectly instrumental in the placement of 30 members and graduate students in new positions. In some instances, this effort resulted in a substantial increase in salary by employers in order to hold personnel in their present positions. Approximately 25 names are currently maintained in a confidential file for prospective employers. At the present time there are several position vacancies on file at *Institute* headquarters. Despite this apparent unbalance, the supply of qualified traffic engineers fail to meet the demand. Some of these positions have been vacant for a considerable period of time. Primary reasons for this condition seems to revolve around creating one position vacancy to fill another, inadequate salaries, or unwillingness on the part of prospective candidates to seek new housing facilities. Perhaps more Student Chapters and more Junior members may be the answer, and eventually balance this serious lack of personnel. We hope this solution portends before new traffic engineering departments are cancelled or before positions are filled by unqualified personnel.

National headquarters maintains a confidential listing of 30 individuals and firms interested in full or part-time consulting work anywhere in the United States, and an additional 27 individuals and firms interested in consulting work in certain geographical areas only. Identical lists, by special request, are also furnished by the Chamber of Commerce of the United States, the National Safety Council, and the American Automobile Association. This distribution provides for adequate handling of weekly inquiries from official and non-official groups seeking consultant services.

Membership

The *Institute* has experienced another active year in the membership field, showing a steady increase in total membership. New members, including two reinstatements and one honorary member, totalled 53—all having qualified by paying initiation fees and dues. Andrey A. Potter, Dean, Schools of Engineering, Purdue University, was the seventh internationally prominent individual to be elected to Honorary membership in the Institute, making a total of four living Honorary members. During the year 20 transfers in grade were effected; 4 members died; 4 resigned; and 6 were dropped for non-payment of dues. Board action on membership during the year at various meetings was as follows:

	New Mem.	Trans.	Resi.	Drop.
10/10/48	14	5	1	
10/12/48	6			
12/9/48	5 (incl. 1 reinst.)		2	6
3/6/49	18	8	1	
6/1/49	10 (incl. 1 reinst.)	7		
Totals	53	20	4	6

At the beginning of the Institute year there were 421 members. The total membership at the present time is, therefore, 460.

On page 388 of the May, 1949 issue of "Traffic Engineering" magazine we published an ITE Membership Growth chart. The increase in membership during the past year follows the normal expansion of the Institute. However, due to an unprecedented number of applications in the closing months of the year it is anticipated that the membership increase will swing to the "accelerated growth" line and pass the 500 mark by the end of the calendar year. At the Board meeting earlier today 28 new members and 8 transfers were approved. Mr. Rodofo Maslog will become the holder of Membership Certificate No. 600—the total number of new members elected by the Board since the founding of

ITE in January, 1931. Confirmation will necessarily be delayed pending receipt of official acceptance. There are approximately 100 additional applications currently being processed by Headquarters office, the Membership Committee, or in the field for completion by engineers who have expressed an interest in membership.

Uniform policies adopted by the new five-man Membership Committee, with Board approval ,and streamlined processing of applications result in more efficient and rapid handling without affecting qualification requirements. No new members are elected who do not meet the qualification standards of a Traffic Engineer as detailed in the Constitution and By-Laws, and who do not meet with the approval of a majority of the Membership Committee and the Board. Members requesting applications for friends and fellow associates should make certain of the candidate's qualifications before committing him to filing application. The Board wishes it to be known that although they are desirous of increasing the membership as rapidly as possible in order to again become self-supporting, they have no intention of "softening-up" for that reason. There are still many experienced traffic engineers who are not members of the *Institute*. Let us know of any of these men who are interested in our organization and we shall be glad to forward the necessary forms direct.

Publications

ITE Technical Bulletins

Due, primarily, to the fact that the stock of Technical Bulletin No. 1 is exhausted and both Technical Bulletins No. 1 and No. 2 are being revised, no effort has been made to induce purchase during the past year. It is anticipated that revised editions of these Bulletins, and new Technical Bulletin No. 3, will be available during the coming year, at which time a major effort will be undertaken to promote sales.

Proceedings

Approximately 400 copies of the 1948 Proceedings, a volume consisting of 160 pages, and approximately 200 copies of prior issues were sold during the past year. As reported by the Secretary-Treasurer, the sale of Proceedings does not come up to expectations and incurs some financial loss. It is planned to correct this deficiency and publish Annual Proceedings "at cost" in the future through improved promotional effort. Mr. William B. Powell succeeded in completing the 1948 issue prior to his death in January 1949, with the valuable assistance of Associate Editor Charles S. LeCraw, Jr.

"Traffic Engineering"

The Board of Direction, at its meeting on March 6, 1949, accepted the resignation of Robert O. Swain, Editor, and LeVerne Johnson, Managing Editor of "Traffic Engineering" magazine. It was the opinion of the Board that the magazine had grown to such proportions, and assumed such national prominence that "volunteer" editorship would work unnecessary hardships on the individual member accepting such responsibility. A special Resolution extending appreciation to Editors Swain, Johnson and all former editors since the magazine's inception in 1933 was adopted by the Board and published on page 309 of the April, 1949 issue.

Effective with the April 1949 issue, the Board assigned the duties and functions of editorship to ITE National headquarters. Your Executive Secretary was appointed Editor and Miss Ann Lincoln Managing Editor. The Board gave the new editors authority to make such changes and improvements deemed necessary to the continued expansion of the magazine. Several changes in style and format were noted with the April issue. The magazine is being increased to a standard 8¼ x 11¼ publication with the October issue, coincident with the beginning of a new volume and a new fiscal year. Circulation has increased approximately 30% in the past eighteen months to a total of 2400 subscribers, including the ITE membership.

Since taking over operation of "Traffic Engineering" magazine in April, advertising income has been increased 25% for the balance of the fiscal year. We are now assured of sufficient income from the magazine for the next fiscal year to place the *Institute* once again on a self-sustaining basis without further recourse to outside contributions. Contributions for the past three years have been of invaluable aid in assuring this sound financial condition.

Plans are underway to increase circulation of "Traffic Engineering" magazine during the coming year through the medium of a selected mailing list. The success of this promotional effort is dependent largely upon your editors' ability to furnish articles which are not only of interest to our readers, but which contain sufficient technical value to be useful in the daily routine of traffic engineers. The editorial staff has been completely reorganized along geographical lines. In addition, secretaries of Local Sections have been appointed "ex-officio" associate editors. Undoubtedly, you will receive requests for material suitable for publication from a member of the editorial staff from time to time. We need the wholehearted cooperation of all members in making the magazine a worthwhile publication.

Traffic Engineering Handbook

The revised edition of this important publication is rapidly nearing completion and distribution is anticipated shortly after the first of the year. We have been out of print of the first edition for two years. Due to certain criticisms from various members, the Board of Direction during the past year appointed a special committee to review methods of publication with the Accident Prevention Department, Association of Casualty and Surety Companies, formerly known as the National Conservation Bureau. I am pleased to report that the Association, through their representative, Mr. Julien H. Harvey, Manager, Accident Prevention Department, has agreed to allow the Institute of Traffic Engineers to appear as sole publisher of the revised edition of Traffic Engineering Handbook. In order to protect the Association's financial investment the revised Handbook will again be a joint copyright of the two organizations. An appropriate honorarium to be placed in the first pages of the revised edition has been agreed upon by the ITE committee and Mr. Harvey, pointing out the invaluable assistance of the Association in underwriting and handling the mechanics of production of this

volume. This commendable action on the part of Mr. Harvey in amending the original contract drawn up with ITE is further evidence of the Association's support of the *Institute* and of sound traffic engineering principles as one of the means of bettering traffic conditions.

Yearbook

Due to the time necessary to effect reorganization of *Institute* Technical Committees, production of the current Yearbook was delayed until the latter part of March. Major changes will be noted in the General Information and Committee Sections. For the first time, the roster contains available telephone numbers. Also, the Geographical Directory shows full members eligible for office, for the benefit of your Nominating Committee. It is anticipated that the next published Yearbook will show a roster of approximately 500 members.

(To Be Continued in December Issue)

SECTION NEWS

Western Section

A meeting of the Southern California Area group was held at the San Diego Hotel on the evening of August 24, called to order by President Jim Reading, who extended a welcome to the members and guests. Cliff Clark, Area Chairman, presided at the meeting at which 22 guests were in attendance in addition to the following ITE members: Skinny DeYoung, Joe Havenner, A. L. Hutchison, Ralph Luckenbach, G. D. McDonald, Jim Reading and Cliff Clark.

The group held an interesting business meeting, discussing at length matters pertaining to additional membership grades, amendments to the ITE Constitution, as well as a proposed site for the 1950 or 1951 ITE Convention, Los Angeles being favored for the 1951 Convention if necessary arrangements can be made.

A. L. Hutchison, Assistant District Traffic Engineer, presented a paper on "Speed Zoning on Rural Highways", followed by considerable discussion from those in attendance.

Ralph Luckenbach and some of his boys conducted an inspection trip in the afternoon, covering the completed portion of the Cabrillo Freeway and then north to Escondido on U. S. 395, returning to San Diego over the right-of-way of the extension of the Freeway. Parts of the latter presented some unique problems in soil movement and the prevention of slides, and "Lucky's " comments on the manner in which the contractor and the Highway Department solved those problems proved interesting to the group.

Yearbook Changes

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Highway Capacity Conferences Held in California

A total of 331 persons attended the two one-day conferences on street and highway capacity which were sponsored by the Institute of Transportation and Traffic Engineering, University of California, in cooperation with the California Division of Highways. These two conferences, with almost identical programs, were held in Sacramento on July 19 and in Los Angeles on July 21.

Mr. O. K. Normann (Mem. ITE), Chairman, Highway Capacity Committee, Highway Research Board, and Chief, Section of Operations, Bureau of Public Roads, was the featured speaker at both of the morning sessions. Mr. Normann has supervised the research on highway capacity which has been carried on for a number of years by his committee of the Highway Research Board, and in these California conferences, he described results of the study and their applications in highway planning, design, and traffic engineering. This material was largely that which will be included in the Highway Capacity Manual which is to be published soon by the Highway Research Board.

Mr. Normann's talk was well illustrated with a large number of slides, and audience interest was evidenced by the enthusiastic question and answer sessions which followed his presentation at each of the conferences. Presiding at these question and answer sessions was U. C. Prof. Donald S. Berry (Assoc. Mem. ITE), and assisting in answering questions on California practice were Engineer of Design A. M. Nash, Assistant Engineers of Design Sam Helwer and Perry Lowden, Assistant Traffic Engineer George M. Webb (Mem. ITE) and Assistant District Engineer Ralph B. Luckenbach (Mem. ITE), all of the California Division of Highways. Mr. Ralph Dorsey (Mem. ITE), Traffic Engineer of Los Angeles, and Prof. Ralph A. Moyer of the University of California, also took part in the panel discussions.

At the beginning of the afternoon sessions, Mr. D. Grant Mickle (Mem. ITE), Director of Traffic Engineering Division, Automotive Safety Foundation, presented illustrated examples showing use of the traffic engineering techniques in improving capacity. Results of "before and after" studies of each of the examples were given so that the degree of improvement shown in each case was readily apparent.

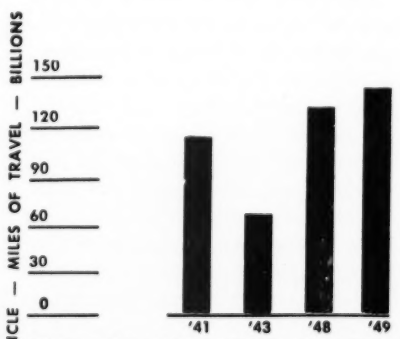
This was followed by an excellent discussion by Mr. J. C. Young, Traffic Engineer of the California Division of Highways, on current Division of Highways practices in applying traffic engineering principles to keeping capacity of existing facilities at a maximum, and in providing proper capacity for the expected traffic volumes on its new facilities. Mr. Young and Mr. Mickle also participated in the question and answer sessions.

Registrations at the Sacramento Conference totaled 159, of which 114 were engineers of the State Department of Public Works, five from the Bureau of Public Roads, 12 from cities, 18 from counties, seven from the University, and three miscellaneous. At the Los Angeles Conference, registrations totaled 172, of which 63 were from the Division of Highways, three from the Bureau of Public Roads, 48 from cities, 26 from counties, nine from the University, and 23 miscellaneous.

Practically every ITE member in California attended either one or the other of these conferences, and several were present at both. F. M. Carter (Mem. ITE), Assistant Traffic Engineer, Division of Highways, was in charge of local arrangements for the Sacramento conference. Other ITE members participating, included: Jack Faustman, Dick Gallagher, Frank Myers, Ross Shoaf, Dick Wilson, Joe Havenner, Ralph Goodman, Alexander Hutchison, Jim Reading, Hugh Gilman, Jay McLendon and "Skin" DeYoung.

Presiding at the Sacramento meeting was Assistant State Highway Engineer R. M. Gillis. District Engineer P. O. Harding of the Division of Highways presided at the Los Angeles conference.

Traffic Trends



TRAVEL ON RURAL ROADS FOR FIRST EIGHT MONTHS OF 1941, 1943, 1948 AND 1949.

Based on Public Roads Administration Data

Personalities . . .

IRVING J. MACK was born on May 13, 1906, within hailing distance of Ebbett's Field, home of the famous Brooklyn (and he still roots for them) Baseball Club.

Irving is reticent to relate the details of his early life but apparently he spent his high school days in Nutley, N. J., and later attended Carnegie Tech, majoring in physics. In 1926 he began work with the American Gas Accumulator Company in Elizabeth, N. J. His duties (in addition to sweeping the floors and pumping out the flooded boiler room) included mixing concrete for the "dummy cop" traffic beacon installation of those days.

In 1930 he worked with Guy Kelcey and Hawley Simpson on the early time-space traffic signal diagram for progressive movement of vehicles. Installations included Boston and Pittsburgh. He wound up with lots of worries over designs of electric circuit diagrams, including eight solid days of circuit testing on Boston's downtown system with only 17 hours sleep.

In the following year he was placed in charge of the Electric Traffic Signal Division of A.G.A., which later became Signal Service Corporation. During this period he served on the ITE Standards and Specifications Committee. His entire attention was devoted to the development of traffic signals and he frankly admits that he had little to do with the development of reflector applications for highway signing.

From 1937 until the outbreak of World War II, he worked on design and production at the Elizabeth plant. During the war he worried through new design and materials problems, particularly for aviation lighting equipment. Since the war he has been involved in the reflector phase of A.G.A. business with particular attention to the proper application of Stimonite reflectors to highways, and emphasis on reflector delineation, which he states is the biggest new development for 24-hour highway use since the advent of good paving. He is now Vice-President in charge of A.G.A. production in the Elizabeth and Chicago plants.

Mr. Mack is a charter member of the ITE. He hopes that he is still on speaking terms with the older members of the Institute, although he has not seen them for a number of years. He expects to be considerably more active in the future and will attempt to catch up with some of the many new plans which have been added to the Institute's activities. In addition to membership in ITE, he is a member of the Society of Automotive Engineers.

His family consists of two daughters, 16 and 14, and a son 9. His chief hobbies are golf, badminton and tropical fishing. His major project for the present is an earnest effort to catch up on the sleep he missed in Boston back in 1930.

When Not to Save Money

Turning off street lights as an economy measure is penny-wise and pound-foolish. Traffic safety authorities say it results in an increase in traffic accidents and crimes which cost inestimably more to the community.

I. S. (BOB) SHATTUCK was born in Jacksonville, Wisconsin, in 1900. Upon graduation from Sheffield Scientific School, Yale University, with a B.S. in Electrical Engineering, Bob

started his career in 1922 as a City Planner with the Minneapolis City Planning Commission. In 1925 he was drafted by the Minneapolis Park Board to lay out a system of boulevard, park and playground illumination. For the next seven years he was in Schenectady, Oakland and San Francisco as Resident Engineer for a City Planning firm. In 1932, he became City Planning Engineer for the City of Oakland and in 1936, opened an office there as Planning and Traffic Consultant.

During this early period, Bob first came in direct contact with traffic engineering by working with Miller McClintock and Ted Matson on a program of staggered hours for certain kinds of business firms in San Francisco. He also developed the first plan for a major street and highway system for the City of Oakland in 1927 and included, for the first time, in the system a by-pass highway along the Oakland waterfront. Later developments proved quite gratifying to Bob, when portions of his highway system were established by the State Highway Department and the Toll Bridge Authority as a nucleus of the bridge approach arteries for the San Francisco-Oakland Bay Bridge.

He was later in charge of planning traffic facilities for the Golden Gate International Exposition. For almost two years during World War II, he was in Washington with the National Housing Agency, having the peculiar and specialized job of dealing with the ODT and other war agencies in promotion of the supplying of such transportation facilities for war workers as would eliminate or reduce the necessity of providing war housing for them.

At present he is retained as Traffic and Parking Consultant by the Minneapolis Chamber of Commerce, which is actively engaged in promoting official attention to improvement of these facilities in the Minneapolis loop area. He is also retained as Planning Consultant by several small cities in the midwest.

Bob is another charter member of ITE. He is also a member of the American Society of Planning Officials and National Association of Housing Officials. He states that some of his more interesting activities in the traffic engineering field include: (1) designing intersection channelizations and medial strip treatments for existing and proposed intersections and trunk highways in San Francisco and Oakland; (2) planning a major street and highway system for the City of Oakland; (3) conducting special studies for the City of Oakland for determining the optimum location of the central artery in the bridge approach system; and (4) conducting traffic studies, including origin and destination, and developing a traffic plan for San Francisco's Embarcadero (the waterfront street along the harbor).

Readers can guess Bob's chief hobby by taking another look at the photograph. He requested this special treatment in order to prove the point that he is an expert fisherman. Other hobbies are: amateur photography, swimming, sun bathing, growing roses and raising a family. However, he definitely states that in Wayzata, on Lake Minnetonka, nothing in the way of outside activities is as pleasant as fishing, except, of course, being ordered around by the family.

New Appointments . . .

Appointment of HENRY K. EVANS, of San Francisco, to the staff of the Chamber of Commerce of the United States, as highway-transportation specialist in the Transportation and Communications Department, was announced recently by Arch N. Booth,

Chamber Manager. Mr. Evans succeeds Francis Twiss, who resigned to become Planning and Economics Director for the International Road Federation (October issue).

Mr. Evans will focus his attention on matters dealing with interstate and local highway transportation, which will include studies of transport economics and highway planning, solutions of truck-loading and automobile parking problems and studies of local transit.

Until recently Mr. Evans was the San Francisco resident manager for DeLeuw-Cather Company, national transportation consulting firm. Before that he was director of transportation and traffic, National Conservation Bureau, New York City. He received a B.S. degree in engineering from California Institute of Technology and held a fellowship at the Yale Highway Traffic Bureau.

Don't forget to order your copy of ANNUAL PROCEEDINGS of the INSTITUTE OF TRAFFIC ENGINEERS priced at $2.00 per copy.

Send your order direct to ITE Headquarters, Strathcona Hall, New Haven 11, Connecticut.

JEROME D. FRANKLIN, formerly with the Traffic Control and Regulations Bureau of the New Jersey State Motor Vehicle Department, was recently appointed Traffic Engineer for the City of Grand Rapids, Michigan. This is the first time that a Traffic

Engineer has been employed by the city, and under the newly-created department, he reports directly to the City Manager, his status being comparable to that of the City Engineer and the Chief of Police.

He is a graduate of the Newark College of Engineering and also attended the Yale Bureau of Highway Traffic between 1946 and 1947.

Stopping Distances

Here is a table prepared by United States Rubber Company which gives not only the stopping distance required after the brakes are applied but also the distance traveled between the time when danger is seen and the foot reaches the brake—this is called the reaction distance.

TABLE OF STOPPING DISTANCES

Speed in MPH	Reaction Distance (Time 1 sec.)	Braking Distance (Dry Pavement)	Total Stopping Distance	No. of Car Lengths
20	29 ft.	22 ft.	51 ft.	3
30	44 ft.	49 ft.	93 ft.	5
35	51 ft.	67 ft.	118 ft.	7
40	59 ft.	88 ft.	147 ft.	8
45	66 ft.	111 ft.	177 ft.	10
50	73 ft.	137 ft.	210 ft.	12
60	88 ft.	198 ft.	286 ft.	16

The Automobilist, Vol. 33, No. 3, July, 1949. Highway Research Abstracts, July, 1949.

Film Available At Reduced Price

With the recent winning of a "Safety Oscar", the American Transit Association's traffic safety picture "Driven to Kill" climaxed a sensational first-year effort aimed at the reduction of street and highway accidents.

Judged by the National Committee on Films for Safety to be the best safety film for theater showing produced during 1948, "Driven to Kill" has been seen by an estimated audience of more than 15,000,000 persons in the United States, Canada, Puerto Rico and Hawaii since its premiere in May of last year. At the present time, a Portuguese version is being shown in Brazil, and other foreign language translations are contemplated.

Following recognition by the National Committee as an outstanding safe driving educational picture, the Association's board of directors announced a reduced sales price of $50 per print. The action was taken by the board because of what it termed "recognition of the transit industry's obligation to make the film generally available at the lowest possible price in order to reach the greatest number of people."

Orders for the film should go directly to American Transit Association, 292 Madison Avenue, New York 17, N. Y.

The Effectiveness of Lane Lines—A 'Before and After' Study

by RICHARD I. STRICKLAND
(Jun., ITE)

Asst. Traffic Engineer, Port of New York Authority.

Many readers are probably familiar with the ramp from George Washington Bridge down to Henry Hudson Parkway. Traffic on the George Washington Bridge increased to the extent that this ramp had backed up behind the signal at its foot almost to the turn-off from the bridge, thereby threatening to congest traffic on the bridge proper. The problem, therefore, was to increase the capacity of this ramp through the signal. The ramp was of sufficient width to accommodate three lanes and a single sign was in place instructing motorists to *form three lanes.*

In conjunction with the placement of lane lines, many additional such signs were placed. Previous to the installation of the lanes, the "before" study showed that 2,882 vehicles could be cleared through the signal per hour of "green period". The "after" study showed that 3,492 vehicles could be cleared per hour of "green period". This represents an increase in capacity of 21%.

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Compiled by
Miss Barbara Pratt
Librarian, Bureau of Highway Traffic

Accident Prevention Department of the Association of Casualty and Surety Companies.
Horror is not enough. New York, The Association, 1949. n.p. A reprint of an article in *Woman's Home Companion,* which tells of the accidents caused due to differences of traffic laws among the states. Emphasis is placed on the need for uniform traffic regulations.

American Transit Association
1949 Transit fact book. New York, The Association, 1949. 16p. n.p. up to 10 copies. This book gives complete information on basic data and trends in the local transit industry in the U. S. It also contains the final figures on operations during 1948.

Automobile Manufacturers Association
Automobile facts and figures. 29th edition. Detroit, The Association, 1949. 80p. n.p. Contains facts and figures about the automotive industry during 1948.

Automobile Manufacturers Association
Motor truck facts. Detroit, The Association, 1949. 56p. n.p. Contains facts and figures for the motor truck industry compiled by the motor truck committee of the Automobile Manufacturers Association.

Bird, Frederick L.
A study of the Port of New York Authority. New York, Dun and Bradstreet, Inc., 1949. 189p. n.p. A study of the development, operation, finances, and plans of the Port of New York Authority.

Highway Research Board
Expressways, Bulletin No. 16. Washington, The Board, April, 1949. 21p. n.p. Report of the committee on the effect of controlled access expressways on urban areas and three papers presented at the 27th annual meeting. The papers include material on parking, limited access highways, and expressway route selection.

Highway Research Board
Parking. Bulletin No. 15. Washington, The Board, March, 1949. 31p. 45c. Includes committee reports and three papers sponsored by the committee on parking and presented at the 27th annual meeting. The articles deal with off-street parking, fringe parking, and zoning requirements for off-street truck loading and unloading facilities.

Indiana. State Highway Commission of Indiana
Highways of Indiana. Indiana, The commission, 1948. 114p. n.p. A report on the state highway system of Indiana based on a comprehensive field inventory, traffic surveys, and subsequent studies and analyses.

National Commission of Safety Education
College and university traffic training. Washington, D. C., The Association, 1949. 12p. 20c. Some principles to guide the development of college and university activities in the field of street and highway traffic control and safety.

National Safety Council
Accident facts. Chicago, The Council, 1949. 96p. Price according to number of copies. Statistics on causes and classes of accidental deaths, traffic and otherwise.

New York. State Conference of Mayors
Experience with parking meters. Report No. 3083. Bureau of Municipal Information. Albany, N. Y., The Bureau, 1949. 8p. $1.00. Charts showing the number of meters, type, operation, maintenance and costs of meters in various towns and cities in New York State.

Pennsylvania. Joint State Government Committee
Highways, a proposed administrative and financial program. Harrisburg, Pa., The committee, 1949. 37p. n.p. The findings of the committee and the proposed highway administration and financial program for the state.

Pennsylvania. Pittsburgh. Regional Planning Association
Parking park study. A city park and underground parking garage for Pittsburgh's golden triangle. Pittsburgh, The Association, 1949 8p. n.p. Drawings and plans for a new underground parking garage in Pittsburgh.

Post, Emily
Motor Manners: The Blue Booklet of Traffic Etiquette. Washington, D. C., National Highway Users Conference, 1949. 46p. n.p. The authority on etiquette explains that good manners are even more important on the highway than in the home.

Society of Automotive Engineers, Inc.
SAE Handbook. 1949 edition. New York, The Society, 1949. 933p. n.p. listed. Contains technical reports, standards, and committee reports for the year 1949.

Thirty-Fourth Street Midtown Assn.
What are the nation's cities doing about traffic and parking? New York, The Association, 1948. 16p. n.p. A survey showing what the cities are doing about the traffic problem, listed by problem and by city.

United States. Chamber of Commerce
Businessmen and public transit service. Washington, D. C., Transportation and Communication Depts., 1949. Unpaged. n.p. A pamphlet prepared for downtown merchants and property owners who are affected by transit service, and dealing with the problems of good transit service.

New York University announces Graduate Courses in Safety Engineering and Fire-Protection Engineering

For bulletin containing full information, including description of additional graduate courses relating to Safety Engineering, address:

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New York University also offers courses in Safety through its Center for Safety Education at 8 Fifth Avenue, New York 11, N. Y.

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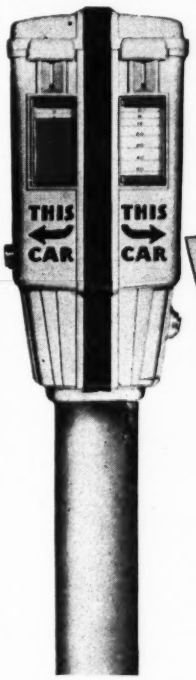

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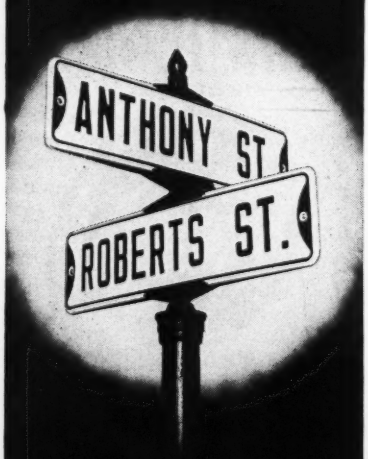

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User tests in normal running include one by a mobile police car in the Midlands which reported a noticeable reduction in background noise.

Transport Management

A limited number of copies of the plans for relighting Kansas City, Mo., are available. This excellently prepared book, containing maps and tables, shows how Kansas City studied and solved its street lighting problems. Copies free while they last. Send your request to The Street and Traffic Safety Lighting Bureau, 155 East 44th St., New York 17, N. Y.

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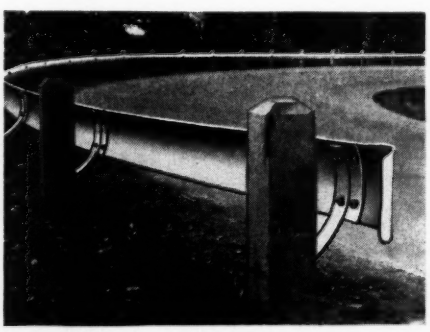

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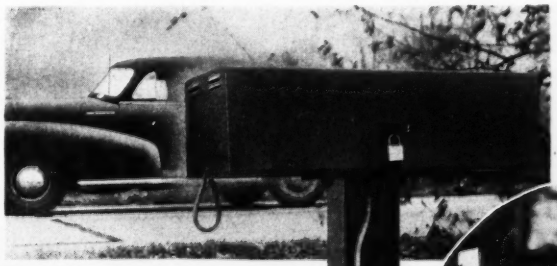

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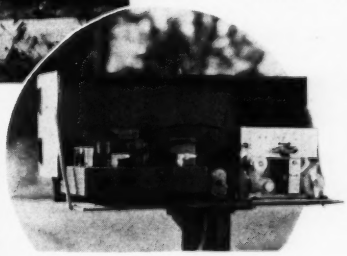

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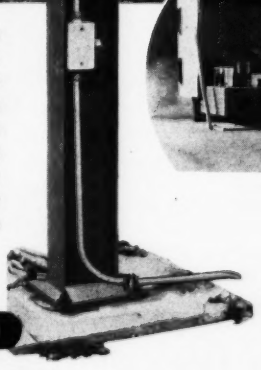

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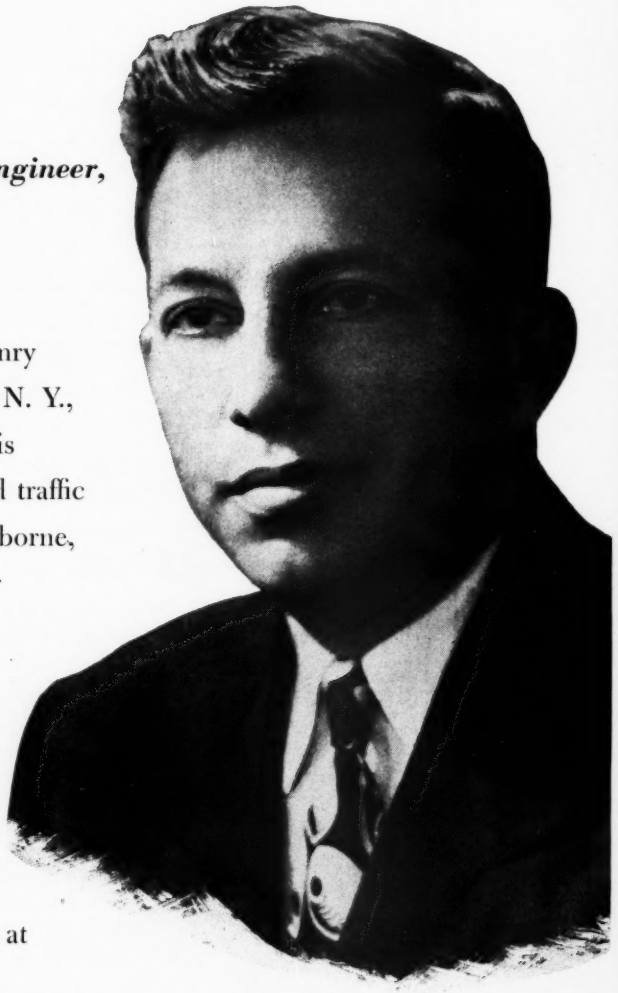

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